

UNIVERSITY OF OKLAHOMA  
GRADUATE COLLEGE

MASCULINE METHODS: TRAVEL NARRATIVES AND SCIENTIFIC AUTHORITY IN  
EARLY VICTORIAN BRITAIN

A THESIS  
SUBMITTED TO THE GRADUATE FACULTY  
in partial fulfillment of the requirements for the  
Degree of  
MASTER OF ARTS

By  
MILLIE DAWN MILBURN  
Norman, Oklahoma  
2022

MASCULINE METHODS: TRAVEL NARRATIVES AND SCIENTIFIC AUTHORITY IN  
EARLY VICTORIAN BRITAIN

A THESIS APPROVED FOR THE DEPARTMENT OF HISTORY OF SCIENCE,  
TECHNOLOGY, AND MEDICINE

BY THE COMMITTEE CONSISTING OF

Dr. Piers J. Hale, Chair

Dr. Peter Soppelsa

Dr. Traci Brynne Voyles

© Copyright by MILLIE DAWN MILBURN 2022  
All Rights Reserved.

## **Acknowledgements**

There are many people that I would like to thank, who helped me not just with this project but to develop as a thinker. First and foremost, I'd like to thank my parents for their unwavering support as I muddled through my academic career. Their faith and trust empowered me to earnestly follow my interest. Thank you to my committee who have each helped me develop the intellectual frameworks which made this project possible and a special thank you advisor Dr. Piers Hale whose patient tutelage and encouragement helped me sustain enthusiasm for the project even when I had my doubts. Thank you to the library staff of the University of Oklahoma, especially those in the History of Science Collections specifically Dr. JoAnn Palmeri and Kerry Magruder for helping me find the books I need and love the books I found. Thank you to my cohort and colleagues in the Department of History of Science, Technology, and Medicine especially my good friend Cecilia Slane. Thank you to Dr. Aparna Nair for first recognizing my interest in historical research and asking "Have you thought about grad school?", this recognition gave me space to ask questions and tell stories.

## Abstract

Feminist formulations have rightly impacted the history of science. In this thesis, I show how in the context of 19th Century Britain, men of science appealed to contemporary norms of masculinity to claim masculine virtues and epistemic authority. British men of science used colonial modes of knowledge production and in doing so asserted their epistemic authority over and in relief of the knowledge of women and Indigenous people. Individual men of science used travel narratives to exhibit virtues associated with heroic voyagers. In their travel narratives, men of science like Charles Darwin exaggerated danger and omitted accounts of assistance to present a particularly British masculinity that exalted independence and stoicism. Charles Darwin's *Voyage of the Beagle* was a wildly popular, public-facing travel narrative. Thomas Huxley, who adopted the moniker 'Darwin's Bulldog', also wrote a travel narrative that was published under very different conditions. Darwin's travel narrative was published at the beginning of his career as an important work of self-fashioning. In contrast, Huxley's *Diary of the Voyage of H.M.S. Rattlesnake* was published post-humously from an unpublished diary. In contrasting Charles Darwin's public-facing travel narrative and Thomas Huxley's more private travel diary we can see how a man of means could afford to avoid the riskiest parts of doing colonial science while asserting their total independence and stoicism. Specifically, perilous masculine experiences became a prerequisite for producing knowledge and telling an exaggerated story of peril became a reliable means of accruing epistemic authority in the scientific community. The production and distribution of the scientific travel narrative, for both scientific and popular consumption, was a direct response to concerns about the decline of British science that Charles Babbage pointed out in 1830, which highlighted the beleaguered state of British science, particularly when compared to the success of French theoretical science.

## Table of Contents

<b>Introduction</b> .....	1
<b>SECTION ONE: Knowing Gender, Gendered Knowing</b> .....	9
<b>SECTION TWO: Decline of Science, Advancing British Genius, Making a man of science</b> .....	21
<b>SECTION THREE: The Scientific Voyage Narrative as Masculine Performance</b> .....	38
<b>SECTION FOUR: Defining the Unreliable</b> .....	57
<b>Conclusion</b> .....	68
<b>Bibliography</b> .....	69

## Introduction

In 1830, *Reflections on the Decline of Science* was published. Written by the English mathematician, philosopher, and engineer Charles Babbage, *Decline of Science* forewarned readers of the fall of British science. In Babbage's view, British science was lagging behind its continental competitors, especially France, which in the eighteenth century had produced and promoted a number of works of theoretical importance, and was home to Georges Cuvier, who had garnered the reputation of being one of the foremost men of science in Europe. To Babbage, this was a situation that demanded immediate action. France had long been Britain's economic competitor, but also her historic enemy. Only fifteen years after Napoleon's defeat at Waterloo Babbage's assessment of British science was that it was gripped in a grim spiral towards despondency and irrelevance. British science, Babbage argued, had lacked direction and purpose for more than a century.<sup>1</sup> Babbage's contemporaries in science could hardly be characterized as idle in the literal sense, but they weren't engaging in the kind of paradigm shifting knowledge production that was all too evident in France. In particular, Babbage hoped to usher in a transformation of the Royal Society, England's most prominent scientific organization, in order to more effectively promote British science both at home and abroad. Babbage's words did not go unnoticed nor his call to action unheeded, and even though the Royal Society failed to undergo the sort of change that Babbage urged, the British Association for the Advancement of Science (BAAS) was founded in 1831 in response to the concerns that he had vocalized. The British Association was established with the explicit goal of providing British science with both

---

<sup>1</sup> Charles Babbage, *Reflections on the Decline of Science in England, and on Some of Its Causes* (England: B. Fellows, 1830), v.

‘direction and impulse.’<sup>2</sup>

The founding of the BAAS and its subsequent impact upon the development of British science has been thoroughly reviewed by historians of science interested in the social mechanisms of British scientific communities.<sup>3</sup> Historians have also noted that conscious efforts were made during the early-mid nineteenth century to develop the cultural authority and identity of the English ‘man of science’ as independent inquirers.<sup>4</sup> It was in the context of concerns for the identity of science and its practitioners that the prominent British historian and philosopher of science, William Whewell, coined the term ‘scientist’ as a suggested collective noun to encompass and bring together an increasingly disparate array of scientific practitioners. Whewell recorded his role in this debate, which he ascribed to ‘some ingenious gentleman,’ in his 1834 anonymous review of Mary Sommerville’s *On the Connexion of the Physical Sciences* in the conservative *Quarterly Review*.<sup>5</sup> For all its self-recognized genius, however, Whewell’s neologism ‘scientist’ did not come into popular use until the turn of the century, — Thomas Huxley, an eminent man of science, thought the term “a vulgar Americanism” and unsuitable because it did not ascribe the moral authority of the truth seekers it meant to label— thus throughout the nineteenth century, contemporaries maintained the use of ‘man of science,’ or

---

<sup>2</sup> British Association for the Advancement of Science, *Report of the First and Second Meetings of the British Association for the Advancement of Science at York in 1831 and at Oxford in 1832: Including its Proceedings, Recommendations, and Transactions* (London: John Murray, 1833), 1, <https://catalog.hathitrust.org/Record/009033760>.

<sup>3</sup> Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford: Clarendon Press, 1981), 1.

<sup>4</sup> Ruth Barton, “‘Men of Science’: Language, Identity and Professionalization in the Mid-Victorian Scientific Community,” *History of Science* 41, no. 1 (2003): 73–119. <https://doi.org/10.1177/007327530304100103>, Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, (Chicago: University of Chicago Press, 2008). Heather Ellis, *Masculinity and Science in Britain, 1831–1918*. (London: Palgrave Macmillan, 2017).

<sup>5</sup> William Whewell, “Mrs. Sommerville on the Connexion of the Sciences,” *Quarterly Review* 51, (March & June 1834): 54–68.

‘gentleman of science.’<sup>6</sup>

From about 1830 to 1850, a transformation was occurring in British society but vestiges of aristocratic norms of elitism were still useful to young men who aspired to do good science. This period has been characterized by historians as one of broad social, economic and political change.<sup>7</sup> Historians of Victorian science have paid particular attention to shifting concepts of legitimacy and authority, as James Moore has highlighted in his account of Victorian culture, as being in a ‘crisis of legitimation’ rather than a ‘crisis of faith.’<sup>8</sup> Further, the notion of innate conflict between science and religion has long been questioned by historians like Frank Turner who characterized the issue as one of professionalization rather than religion.<sup>9</sup> British Historian John Hedley Brooke further elucidates the complex relationship between science and religion. Beyond narratives of conflict and harmony, Brooke highlighted that science and religion are not static entities in themselves, but rather are complicated historically located social systems that reflect people’s concerns and context.<sup>10</sup> However, men of science did increasingly claim moral authority as heroic truth seekers, sometimes in direct opposition to clerical authority.

In the early Victorian period, young scientific men sought to install themselves as arbiters of moral authority on the grounds that their scientific education had granted them unique access

---

<sup>6</sup> Paul White, *Thomas Huxley: Making the “Man of Science.”* (Cambridge; New York: Cambridge University Press, 2003), 1, <https://openlibrary.org/books/OL18204507M>.

<sup>7</sup>Walter E. Houghton, *The Victorian Frame of Mind, 1830-1970*, (New Haven: Yale University Press, 1971); William Irvine, *Apes, Angels, and Victorians: The Story of Darwin, Huxley, and Evolution*. (New York: McGraw-Hill, 1955); Sheldon Rothblatt, *Tradition and Change in English Liberal Education: An Essay in History and Culture*. (London: Faber and Faber, 1976); Philip Rehbock, *The Philosophical Naturalists: Themes in Early Nineteenth-Century British Biology*. (Madison: University of Wisconsin Press, 1983).

<sup>8</sup> James R. Moore, “Crisis Without Revolution: The Ideological Watershed in Victorian England,” *Revue de Synthèse* 107, no. 1–2 (January 1986): 56, 66, <https://doi.org/10.1007/BF03189011>.

<sup>9</sup> Frank Turner, “The Victorian Conflict between Science and Religion: A Professional Dimension,” *Isis* 69, no. 3 (1978): 356–76, <https://www.jstor.org/stable/231040>. John Hedley Brooke, *Science and Religion: Some Historical Perspectives*, (Cambridge; New York: Cambridge University Press, 1991).

<sup>10</sup> Brooke, *Science and Religion*, 42.

to the means to induce the truth from the natural world. As scholars have noted, from the mid nineteenth century, the middle class ‘man of science’ was a source of increasing cultural authority.<sup>11</sup> My concern here, though, is not so much with the relationship between science and religion as competing arbiters of truth, but rather with the gendered framing of British science and of the British man of science.

Before the nineteenth century, honor, as a mark of cultural authority, was innately tied to aristocratic power structures, but thereafter both honor and credibility remained entwined even as aristocratic authority waned. From the early decades of the nineteenth century, it was deemed increasingly necessary to reframe scientific authority as independent from aristocratic power, — one of the several concerns that Babbage had raised — and instead emphasizing and developing the cultural authority of a specific form of middle-class masculine identity. One could evoke honor through tireless exertion for the benefit of science. This encouraged young men of science to risk their lives on voyages of discovery in order to garner the respect necessary to make theoretical claims, while providing the metropole with collections necessary to do the lofty philosophical work of theorizing about immutable laws of nature. This largely maintained a hierarchy of practitioners while obscuring the mechanism of that hierarchy.

On the heels of the French Revolution, and despite of the defeat of Napoleon, the fear of a homegrown rebellion influenced the way British men of science theorized. As liberals made efforts to reform society, they reinforced increasingly conservative ideas about gender as an organizing principal of society. They did so not only through reframing scientific institutions, such as the British Association, around certain gendered expectations, but also through the

---

<sup>11</sup> Rothblatt, *Liberal Education*, 135. As cited in Stefan Collini, *Public Moralists: Political Thought and Intellectual Life in Britain, 1850–1930* (Oxford: New York: Clarendon Press; Oxford University Press, 1991), 114.

rhetorical framing of the ideal scientific practitioner in highly gendered terms. In particular, I argue that this kind of masculine performativity was not only on display in the practices and rules of participation at the British Association Meetings, for example, but influenced the narrative form and appeal to tropes of Victorian heroic masculinity that came to define the scientific voyage narrative.<sup>12</sup>

Through the travel narrative, the daring and dangerous voyage in pursuit of scientific knowledge, early career men of science could demonstrate their manly character by facing seemingly insurmountable odds in remote locations and living to tell the tale. Telling the tale was particularly important and the ways that men of science told their tales to both the public and to their scientific peers reflected cultural associations of manly virtue, casting themselves as heroic, yet humble servants of knowledge, truth, nation, and empire. Tropical regions were of particular interest to the earnest man of science, not just because of their novelty but also because of the danger that was folded into narratives of the global south. Tropical environments were exoticized to assert the inferiority of tropical landscapes and people and ultimately to legitimize colonial subjugation.<sup>13</sup>

Here I want to argue that a specific genre of scientific literature — the travel narrative — was an important part of defining, publicizing, and cementing a particular form of masculinist heroism as fundamental to the identity of the man of science and further, that accessing remote facts alone was not sufficient to establish a man of science. In publishing a travel narrative and telling their own stories, men of science engaged in a certain form of ‘self-fashioning’ through

---

<sup>12</sup> This assertion is grounded an anti-essentialist theory of gender as normative therefore exclusionary which is expounded by Judith Butler in their article “Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory.”

<sup>13</sup> David Arnold, “‘Illusory Riches’: Representations of the Tropical World, 1840-1950,” *Singapore Journal of Tropical Geography* 21, no. 1 (March 2000), 7. <https://doi.org/10.1111/1467-9493.00060>

which they sought to establish both themselves in science and science in culture.<sup>14</sup> I argue that we gain something from re-reading books of this genre in terms of a masculine self-fashioning, that, from the middle decades of the nineteenth century, were in many ways a specific response to the decline of science debate that Babbage had instigated. Science needed more than men, according to Babbage and his likeminded contemporaries, it needed heroes.

Charles Darwin and Thomas Huxley were among the most notable mid-century men of science who published travel narratives, although there were others.<sup>15</sup> They developed and advanced the notion of the gentleman of science, forged in struggle and service to both science, truth, and the British Empire. In the process of advancing this identity, they also precluded people who had not, or could not, demonstrate a similar masculine commitment to science through risk. This gave the impression of a true meritocracy while ignoring the specific social — and quite obviously gendered — milieu required to meet such a standard. Not only must a good man of science certainly be male but also white and European, and, in the context of redressing the decline of English science, the ideal man of science also belonged to the empirical and inductive traditions of Bacon and Newton.

In order to fully develop my argument, my thesis is divided into four sections. In the first I consider the historiography of gender as a useful category of historical analysis, not only looking to the way gender has been utilized by scholars such as Joan Wallach Scott, but also to those like John Tosh who, following Scott's work, subsequently focused their attention on

---

<sup>14</sup> Historians of science have come to consider the idea of 'self-fashioning; as a result of Mario Biagioli's *Galileo Courtier*. I show below, this concept has been and remains a valuable tool for thinking about the agency involved in framing individual and social identity.

<sup>15</sup> The most notable omissions here are Alfred Wallace who is known as the co-discoverer of evolution and Joseph Dalton Hooker, who later went on to succeed his father as Direct of the Botanic Gardens at Kew.

masculinity as a socially constructed identity.<sup>16</sup> In doing so, I show how these kinds of theoretical approaches inform my own analysis of the conception of science and its practitioners both in the context of the decline of science debate and then in scientific travel narratives. In the second section, I revisit the Charles Babbage and the ‘Decline of Science’ narrative and the founding and justification of the British Association for the Advancement of Science (BAAS). In this section I show that concerns for the future of British science were informed by emasculating comparisons of British science to more theoretically productive continental science and the ways that specific British men of science constructed their own masculine character. In the third section, I turn to two notable travel narratives of the mid-nineteenth century. First, Darwin’s very popular *Journal of Researches*, first published in 1839, but which reached a much wider and popular audience after being shortened and republished with illustrations in 1845.<sup>17</sup> Darwin’s travel narrative was and remains popular and has been reprinted in hundreds of editions in dozens of languages.<sup>18</sup> The other work in this genre I consider is quite different, that written by Thomas Henry Huxley. Huxley’s own account of his own voyage, on HMS *Rattlesnake*, was written in a more private venue and was published only posthumously, but both reflect assumptions about contemporary scientific masculinity. In my fourth section I turn to the nineteenth century reconsideration of the work of the German naturalist, scientific traveler, and

---

<sup>16</sup>Joan W. Scott, “Gender: A Useful Category of Historical Analysis,” *The American Historical Review* 91, no. 5 (1986): 1053–75, <https://doi.org/10.1086/ahr/91.5.1053>; John Tosh, “What Should Historians Do with Masculinity? Reflections on Nineteenth-Century Britain,” *History Workshop*, no. 38 (1994): 179–202.

<sup>17</sup> Charles Darwin, *Journal of Researches into the Geology and Natural History of the Various Countries Visited by H.M.S. Beagle, Under the Command of Captain Fitzroy, R.N. From 1832 to 1836*. And Charles Darwin, *Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of H.M.S. Beagle Round the World, Under the Command of Capt. Fitz Roy*.

<sup>18</sup> R. B. Freeman, *The Works of Charles Darwin: An Annotated Bibliographic Handlist*, 2nd ed. (Dawson: Folkstone, 1977), <http://darwin-online.org.uk/content/search-results?pagesize=50&sort=date-ascending&searchtitle=Journal+of+Researches&datebefore=&publisher=&searchid=&allfields=&name=Darwin+Charles+Robert&place=&periodical=&published=true&dateafter=&pageno=1>.

writer, Maria Merian (1647–1717) who was active over a century earlier. In a number of nineteenth century reviews of her work, I argue, as part of the campaign to ratify the ideal of British gentleman of science, her work was criticized and undermined because both she and her methodologies were unfit to be part of the cannon of science, as it had previously been.

## **SECTION ONE: Knowing Gender, Gendered Knowing**

In the nineteenth century, liberal ideas built on the Enlightenment assumptions about the virtues of individual rights and civil liberties; the individual's capacity for reason had come to define humanity. This definition of the human was dependent upon the precept that the capacity for rationality and reason separated people from the rest of the animal kingdom. This enlightenment distinction between human and subhuman exalted reason above all other ways of knowing the world. In fact, it posited reason as the only way of knowing the world with any reliability. To be clear, I do not contest that reason and rationality provide a reliable basis for the production of knowledge, but I am concerned that this enlightenment paradigm of knowledge production necessarily exalts not just some objective 'truth,' but also, and at the same time, a white, hetero, patriarchal perspective. In this formulation, reason is only accessible to those without the biases associated with a subordinated social position, effectively barring people in those social positions from epistemological authority. In the nineteenth century, scientific methodologies narrowed to exalt masculine coded experiences as the only legitimate experiential corpus from which scientific knowledge could be produced. White, British, middle-class men could be objective observers of nature while all others were incapable of producing knowledge and were treated as objects of study rather than subject that produced knowledge.

American feminist philosopher Sally Haslanger, in her 2012 essay, "On Being Objective and Being Objectified," identified reason as gender coded masculine. Interpretations of masculinized reason have varied, but there is a general consensus that feminists should avoid uncritically exalting reason and rationality as the gold standard in knowing.<sup>19</sup> According to

---

<sup>19</sup> Sally Anne Haslanger, "On Being Objective and Being Objectified," in *Resisting Reality: Social Construction and Social Critique* (New York: Oxford University Press, 2012) 35–82.

Haslanger, one vein criticizes reason for its myopic focus, which obscures the value of contributions made by marginalized people. This view further associates the exaltation of reason as a thinly veiled aggrandizement of masculinity. Reason is not the problem in this vein, rather the weaponization of reason that is implicated. In this view, a feminist reason may be integrated into more traditional programs of reason, perhaps rehabilitating reason for liberatory ends.<sup>20</sup> The other vein is less optimistic about the liberatory potential of reason positing that a simple shift in focus cannot rehabilitate reason as it is a fundamentally reductive and violent epistemological strategy. This view is popular among postmodernist feminists.<sup>21</sup>

Objectification is a notion with broad theoretical implications. Feminist theorists have paid particular attention to sexual objectification.<sup>22</sup> Objectification is the social process by which people, usually women, come to be viewed and treated as objects. Andrea Dworkin, an American Feminist theorist posits that

“Objectification occurs when a human being, through social means, is made less than human, turned into a thing or commodity, bought and sold. When objectification occurs, a person is depersonalized, so that no individuality or integrity is available socially or in what is an extremely circumscribed privacy. Objectification is an injury right at the heart of discrimination: those who can be used as if they are not fully human are no longer fully human in social terms; their humanity is hurt by being diminished.”<sup>23</sup>

In 1995, American philosopher Martha Nussbaum identified seven features of objectification.

These features are instrumentality, denial of autonomy, inertness, fungibility, violability,

---

<sup>20</sup> Carol McMillan, *Women, Reason, and Nature: Some Philosophical Problems with Feminism* (Princeton, N.J.: Princeton University Press, 1982), x.

<sup>21</sup> Haslanger, *Resisting Reality*, 35.

<sup>22</sup> Anti-pornography theorists like Catherine MacKinnon and Andrea Dworkin are particularly active in this discourse.

<sup>23</sup> Andrea Dworkin, “Against the Male Flood: Censorship, Pornography, and Equality”, in *Oxford Readings in Feminism: Feminism and Pornography*, (Oxford: Oxford University Press, 2000), 30–31.

ownership, and denial of subjectivity.<sup>24</sup> The Australian-British philosopher Rae Langton added three new features to Nussbaum's list in 2009. These features include reduction to body, reduction to appearance, and silencing.<sup>25</sup> Though these descriptions may be useful in establishing a surface awareness of sexual objectification, the American philosopher Nancy Bauer is among those who remain unconvinced that identifying criteria for sexual objectification is productive. Instead expressing concern that such qualifications obscure that it is a systemic and normative phenomenon dependent upon a collective understanding of the world.

Contemporary discussions of objectivity are strongly influenced by Kantian ethics with particular attention paid to the second prong of the Categorical Imperative: "Act so that you treat humanity [Menschheit], whether in your own person or in that of another, always as an end [Zweck] and never as a means only."<sup>26</sup> Most thinkers approach objectification as a morally problematic phenomenon. The central idea is that it is morally reprehensible to operationalize another person and in treating a person only as a means to an end, that person's humanity is reduced. For Kant, humanity was intimately tied to the capacity for rational thought. This capacity for rational thought reflects a uniquely human dignity or an inner worth that exists independently of their usefulness.

In the latter part of the twentieth century, a number of scholars raised important questions about gender and its place in history as a category of analysis. Following Peter L. Berger and Thomas Luckmann's influential 1967 book *The Social Construction of Reality*, theorists

---

<sup>24</sup> Martha C. Nussbaum, "Objectification," *Philosophy & Public Affairs* 24, no. 4 (1995): 249–91, <https://www.jstor.org/stable/2961930>.

<sup>25</sup> Rae Langton, *Sexual Solipsism: Philosophical Essays on Pornography and Objectification* (Oxford: University Press, 2009), <https://doi.org/10.1093/acprof:oso/9780199247066.001.0001>.

<sup>26</sup> translation from Kurt Mosser, "Kant and Feminism," *Kant-Studien* 90, no. 3 (1999): 322–53, <https://doi.org/10.1515/kant.1999.90.3.322>, 322.

considered gender as an analytical category that is not natural and immutable, but socially constructed and in flux.<sup>27</sup> By the 1980s, feminist theory was developed and implemented in disciplines beyond gender and ethnic studies. Perhaps foremost among these gender theorists working in history was the American historian Joan Wallach Scott, whose 1986 article “Gender: A Useful Category of Historical Analysis” and subsequent 1988 monograph *Gender and the Politics of History* became foundational to those who considered the place of gender in historical analysis.<sup>28</sup> In the vein of post-modern and post-structuralist scholarship, Scott maintained that gender was a social and cultural construct, and thus revealed a category of historical analysis comparable to, and indeed complicit in the construction of those of class and race.<sup>29</sup> Scott’s work thus shed light on how gender has the potential to be an important facet of what scholars have subsequently termed intersectional analysis; the attempt to show how gender, race, and class interact to form social and cultural hierarchies and other power structures. Her work has thus been foundational, and remains important for social, cultural, political and gender theorists.

In her work, Scott pointed out that previous accounts of gender history were reduced to merely women’s history. Though Scott acknowledged that scholars that did so had engaged in an important effort to recover the agency of women as historical subjects, she argued that this kind of scholarship missed the radical potential of recognizing gender as an ideologically constructed concept.<sup>30</sup> Although many scholars found Scott’s work highly provocative and productive, she

---

<sup>27</sup> Peter L. Berger, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge* (Garden City, N.Y.: Doubleday, 1967), 1.

<sup>28</sup> Scott. “Gender: A Useful Category of Historical Analysis,” Scott, *Gender and Politics of History*.

<sup>29</sup> Scott. “Gender: A Useful Category of Historical Analysis,” 1068–9

<sup>30</sup> Scott. “Gender: A Useful Category of Historical Analysis,” 1060

was not without her critics.<sup>31</sup> As gender was considered less as a discreet category of biological sex but as the social construction of sexual difference; the uses of extending gender analysis to not only analyze conceptions of femininity, but also of masculinity, was particularly contentious. In turning to consider gender in this way, the American historian Joan Hoff accused postmodernist thinkers — and Scott in particular — of depoliticizing gender and “destroying a collective concept of women needed to organize and sustain a feminist movement.”<sup>32</sup> In a sense this critique was warranted as Scott’s focus on gender did refocus on gendered linguistics rather than the lived experience of women in history,<sup>33</sup> — but arguably in ways that her critics did not foresee; namely, it opened up historical and critical scholarship of masculinity in ways that opened up an area in which queer scholars could narrate their own histories.

It was in this context that the British historian John Tosh wrote his 1994 essay, “What Should Historians Do with Masculinity?”<sup>34</sup> Tosh was among the first historians to introduce the study of masculinity as a valuable tool that might deepen our understanding of the highly gendered social structure of Victorian England in a way that did not merely follow the well-trodden path of ‘separate spheres.’ Rather, he revealed how the construction of gender identity functioned to define expectations of men and Victorian ideals more generally. Tosh showed the value of treating Victorian men as gendered subjects as their gender identity impacted the relationship between home and work in the lives of Victorian men. In light of Tosh’s work, it

---

<sup>31</sup> For an assessment of Scott’s work see, Judith Butler and Elizabeth Weed, *The Question of Gender: Joan W. Scott’s Critical Feminism*, 21st Century Studies; v. 4 (Bloomington, Ind.: Indiana University Press, 2011). Specifically, Scott’s conception of gender relies on a degree of essentialism because of its reliance on sex as the biological basis of the socially constructed gender

<sup>32</sup> Joan Hoff, “Gender as a Postmodern Category of Paralysis,” *Women’s Studies International Forum* 17, no. 4 (1994): 445, [https://doi.org/10.1016/S0277-5395\(05\)80051-2](https://doi.org/10.1016/S0277-5395(05)80051-2).

<sup>33</sup> Joan W Scott, “The Evidence of Experience,” *Critical Inquiry* 17, no. 4 (1991): 773–97, <https://www.jstor.org/stable/1343743>.

<sup>34</sup> Tosh, “What Should Historians Do with Masculinity?” 179–202.

became apparent that though masculinity itself was not monolithic, it often functioned as if it was, and that it was this that underpinned men's social power and the protection thereof. In his work, Tosh identified a transition away from earnest expressiveness towards a more indomitable conception of manliness in Victorian society, and charted the concerted effort to acquire manly character in order to graduate from boyhood across an individual lifespan. According to Tosh, the graduation from boyhood to manhood was achieved through the performance of manly endeavors that were thought to demonstrate and imbue the individual with characteristics that would define him as a man. Tosh further argued that the characteristics which defined masculinity varied depending on the cultural and individual context but that "underlying them all was the incontrovertible fact of men's social power."<sup>35</sup>

In addition, Tosh showed, that the precepts of manliness were contested and appropriated by a wide variety of groups. Individuals and groups vying for social power contested and appropriated ideas and ideals of manliness because manliness was synonymous with the spirit of virtue and heroic triumph, and femininity the converse.<sup>36</sup> As both Scott and Tosh have shown, in distinguishing gender from the presumed biological categories of sex, they were able to expose ways in which conceptions and standards of masculinity and femininity were deployed in the political and public spheres as a means to establish social, political, and cultural hierarchies. Following Scott and Tosh's work, historians have paid considerable attention to gender, both femininity and masculinity, in their analyses of the past.<sup>37</sup>

---

<sup>35</sup> Tosh, "What Should Historians Do with Masculinity," 183–184.

<sup>36</sup> John Tosh identifies preachers, school-masters, and novelists in "What Should Historian's do with Masculinity?," 180.

<sup>37</sup> See, for example, Butler and Weed (eds.) *The Question of Gender*.

Self-fashioning is the historical heuristic to explore how actors developed themselves and their reputation to appeal to contemporary power structures and maximize personal agency. Attention has been paid to the idea of self-fashioning in the work of Mario Biagioli, of course, but also and specifically with reference to masculinity in that of Michèle Cohen who, like Stephen Greenblatt, asserted that this self-fashioning of male identity was largely a linguistic endeavor. Cohen focused on how French salons and the effeminacy of luxury in the eighteenth century influenced the self-fashioning of English gentlemen in the nineteenth century. Her analysis focused on the importance of verbal expressiveness and eloquence as definitive of masculinity in eighteenth-century French society.<sup>38</sup> This is especially important for my own work, and in particular, of my analysis of British men of science in the nineteenth century because they often positioned their ideal of English masculinity in opposition to what they characterized as the femininity (but also the effeminate masculinity) of the French. Though Michèle Cohen focuses on the use of language as a written or verbal mode of communication it is important to note that letters, words, and sentences are not the only systems of symbols that ascribe meaning. We can think of the system of symbols that connote gender as language that is crucial to the process of self-fashioning. The system of symbols that connote gender includes tools or personal aesthetics that reflect and communicate gendered social roles.

My primary interest is how men of science in nineteenth-century Britain appealed to norms of masculinity. It is, however, important to note that in the eighteenth-century, women of science invoked norms of femininity when presenting themselves and their work. In women's history of science, the German-born astronomer Caroline Herschel is an important figure in this

---

<sup>38</sup> Michèle Cohen, *Fashioning Masculinity: National Identity and Language in the Eighteenth Century* (London & New York: Routledge, 1996), 17.

regard. Emily Winterburn shows how access to scientific institutions depended on conscious cultivation of networks and gender was a salient factor in standards of education and decorum.<sup>39</sup> Winterburn's discussion of Herschel demonstrates how scientific identity and success depended upon convincing — and conforming — gender performativity. In Caroline Herschel's case, Herschel distanced herself from anything that might have suggested personal scientific ambition, highlighting her dependence upon her brother William Herschel and appealing to gendered notions of self-presentation. A point she made emphatically when negotiating publication of her own observations, when she said "I am nothing, I have done nothing; all I am, all I know, I owe to my brother. I am only the tool which he shapes to his use—a well-trained puppy-dog would have done as much."<sup>40</sup> However she worked both with and independently of her brother yet much of her work was attributed to him, and him alone. Caroline Herschel reconfigured their 1786 *Catalogue of nebulae and clusters of stars*, published only under William's name in the Royal Society's *Philosophical Transactions*, consisting of over 2,500 nebulae. This was a huge undertaking that required tedious calculation but also the philosophical prowess to conceive of an organizational schema to house the numerous nebulae. For this and discovering comets, but notably also, as Winterburn has shown, because she presented herself in a suitably submissive feminine way, Caroline Herschel was awarded the Royal Astronomical Society's Gold Medal in 1828 and rare stipend from the British government. The stipend was awarded to her specifically for her role as assistant to her brother William Herschel, however her individual contributions to British astronomy were well recognized. Though Caroline Herschel's work was of course worthy

---

<sup>39</sup> Emily Winterburn, "Caroline Herschel: Agency and Self-Presentation," *Notes and Records* 69 (2015): 69–83, <https://doi.org/10.1098/rsnr.2014.0060>, 69–70.

<sup>40</sup> John Herschel, *Memoir and Correspondence of Caroline Herschel* (New York (State): D. Appleton and company, 1876), <https://hdl.handle.net/2027/miun.ajm8965.0001.001>, ix.

of recognition, her mastery of astronomy, apparent, as Winterburn has convincingly argued, such recognition was contingent upon the convincing and coherent performance of gender norms.

Turning now more directly to the history of nineteenth-century science, as early as the 1950's historians grappled with the nature of Victorian values. In his classic work, *The Victorian Frame of Mind* Walter E. Houghton explored the state of Victorian society and the state of what he called 'the Victorian mind.' Houghton's characterization of Victorian society as one knowingly in a state of transition was significant. The idea of a culture in transition is a useful heuristic for more richly contextualizing the mass of materials that came out of Victorian Britain. Houghton showed that there were rapid changes in how society was organized, the authority of established institutions such as the church and aristocracy had been weakened by the French revolution as the individual rights of man and the efficacy of reason were championed over subservience to the authority of the established church or the divine right of kings. This is certainly factual enough, but the concept of willful transition muddles the truth that no one knew the future of Victorian society and there was not a unified vision of that future. Houghton's focus on public discourse limits the scope of his analysis in a way that obscures the contingent nature of Victorian valuation. There are few effective historical tools to address the fact that people are different even as they share contexts. Houghton homogenizes the Victorian experience by overgeneralization, though his analysis purports to reflect the state of the Victorian mind, it is much more accurate to describe it as an exaltation of the emergence of the contemporary view of the masculine middle-class mind. Houghton pays special attention to the emergence of independence of mind as constitutive of Victorian intellectual values. Although one reviewer found Houghton's depiction of Victorians as 'an oversomber crew' who lacked a certain

humanness, this is not grounds for serious censure.<sup>41</sup> Even as Houghton's work expanded the historiography, demanding more richly contextualized claims, it narrowed the frame of the Victorian mind to exclude valuations contrary to the severe man of science which was constructed in the Victorian period. The *Victorian Frame of Mind* works best if read as an accumulation of stories that Victorian Men told about themselves to negotiate an advantageous position of power as men built bridges to their tomorrow on the backs of those they erased. Victorian men of science strengthened their own claim to the cultural power of truth through appeals to patriarchal authority which remained firm even as other cultural institutions were weakened by reformers.

In recent years historians of science have paid particular attention to the ways in which contemporary understandings of masculinity informed the way men of science devised both their scientific personas, but also their scientific arguments. The historian of Victorian science Michael Reidy has looked at mountains and mountain climbing in the mid-Victorian so-called 'Golden Age' of mountaineering, as the preferred site of masculine individuation.<sup>42</sup> His focus on the man of science John Tyndall showed how Tyndall appealed to the authority of adventure, positioning himself as an independent inquirer informed by personal experience as opposed to armchair philosophers who, by comparison, effeminately accepted the expertise of established authorities. Also important to this analysis is the work of the historian of science Bruce Hevly who argued in his discussion of the ways men of science like James Forbes and John Tyndall invoked their experiences in the Alps to assert the reliability of their theories of glacial science.

---

<sup>41</sup> David Owen, "Those Victorians," *The Canadian Historical Review* 39, no. 4 (December 1958): 328.

<sup>42</sup> Michael S. Reidy, "Mountaineering, Masculinity, and the Male Body in Mid-Victorian Britain," *Osiris (Bruges)* 30, no. 1 (2015): 161, <https://doi.org/10.1086/682975>.

These antagonists established their authority through their accounts of discomfort, peril and of course heroism.<sup>43</sup> Though my focus is on long term sea voyages they are clearly not the only space in which men could risk their lives to rigorously investigate the laws of nature and live to tell the tale. The stories they gained along the way granted them a strong rhetorical device to demand deference and authority to assert that they had a reliable understanding of the laws of nature.

Further, the historian Paul White took up themes of Victorian masculinity and how British men of science interacted with it in his 2003 biography, *Thomas Huxley: Making the Man of Science*. Thomas Henry Huxley is well known as the scientific thinker and tireless advocate of education reform who adopted the moniker “Darwin’s Bulldog” for his work as a vehement proponent of evolutionary thought in Britain. White highlights not only how important understandings of gender were to Huxley’s own career advancement, but to models of higher education in early Victorian England, which privileged classics over the more technically focused sciences. This hierarchy was based on the intellectual authority of classic literature.<sup>44</sup> Many of Huxley’s contemporaries conceptualized science as merely a practical tool of industry, useful for innovation but tangential to the moral development of the individual. To Huxley science was more than a branch of knowledge, it instilled reverence for immutable laws of nature and truth which further promoted independence of mind. Veneration of truth was a fundamental building block of moral development, Huxley maintained.<sup>45</sup> Huxley positioned moral authority of truth at odds with established intellectual authority. In doing so he could not only vindicate the

---

<sup>43</sup>Bruce Hevly, “The Heroic Science of Glacier Motion,” *Osiris (Bruges)* 11 (1996): 86, <https://doi.org/10.1086/368755>.

<sup>44</sup> White, “Science as Culture” in *Thomas Huxley*, 67–97.

<sup>45</sup> White, *Thomas Huxley*, 57.

high ideals of immutable truth but to also his own conception of masculinity.

Men like Thomas Henry Huxley were instrumental in constructing the notion of what he framed as the ‘gentleman of science’ in opposition to the earlier ideal of the term gentleman being strictly used to describe aristocratic social standing and the life of leisure rather than work that was associated with it. As Paul White has argued, through the efforts of Huxley and others like him, at least within Victorian middle class polite discourse, the term ‘gentleman’ increasingly became a moral and ontological category that idealized a certain form of middle-class industry that required talent and zeal. Further, the ideal ‘gentleman of science’ was a man who not only performed diligent intellectual labor, but did so in service to the nation and the advancement of scientific knowledge ostensibly for the betterment of all mankind. Though the idea of nobility remained tied to hereditary bloodlines, being a gentleman of science was tied to particular forms of masculinity, and a part of being a gentleman of science was the exhibition of certain masculine virtues in service to the tireless investigation of the natural world.

## SECTION TWO: Decline of Science, Advancing British Genius, Making a man of science

“In England, particularly with respect to the more difficult and abstract sciences, we are much below other nations, not merely of equal rank but below several even of inferior power. That a country, eminently distinguished for its mechanical and manufacturing ingenuity, should be indifferent to the progress of inquiries which form the highest departments of that knowledge on whose more elementary truths its wealth and rank depends, is a fact which is well deserving the attention of those who shall inquire into the causes that influence the progress of nations.”<sup>46</sup>

In 1830, Charles Babbage published his *Reflections on the Decline of Science in England and Some of its Causes*, in which he outlined the concerns he shared with other eminent men of science that England had fallen behind in every philosophically relevant science. Babbage and his contemporaries hoped to bolster British science by constructing institutional frameworks to legitimize the work and knowledge of men of science. This material support would allow eminent men of science to stop spending their energies on mundane matters of industry to make ends meet and allow them to focus on ‘the highest departments of that knowledge on whose more elementary truths (Britain’s) wealth and rank depends.’<sup>47</sup> Babbage and contemporaries like William Whewell and David Brewster were among those dissatisfied with the lack of governmental support for science. Unlike in Germany and France, in Britain there were few if any governmental appointments in which British men of science could concentrate on philosophizing about nature and its order. Many thought that Britain was not producing naturalists with “the genius and arranging spirit of Cuvier” and this was perhaps because of the lack of material support which had smothered any British genius.<sup>48</sup> Babbage argued that British

---

<sup>46</sup> Babbage, *Reflections on the Decline of Science in England, and on Some of Its Causes*. 1

<sup>47</sup> *Ibid.* 1,11–12,15

<sup>48</sup> Sir Humphry Davy to William Harcourt. From Morrell and Thackray, *Gentlemen of Science*, 16.

men of science were employed in a mercenary manner. Only science that was explicitly and assuredly economically advantageous was supported by state funding structures. Babbage and those similarly frustrated with the way scientific work was funded were not just concerned for the state and future of British science but also of course their own livelihoods. Babbage a successful banker spent much of his fortune, designing, prototyping and building his calculating machines.<sup>49</sup> Babbage was particularly concerned that men of science were forced to rely on aristocratic association to gain recognition and eventually support in the British Scientific community.<sup>50</sup> Babbage's *Decline of Science* was not so much an attack on the British government generally but a scathing charge against the *Royal Society* and the conduct of its officers, more in an act of protest than persuasion.<sup>51</sup> However, many were persuaded or at least considered more seriously that the scientific institutions of Victorian Britain may have needed to be reformed.

The British Association for the Advancement of Science (BAAS) was formed with the explicit purpose of raising the station of British science at home and abroad and to subsidize the shortcomings of the Royal Society. In the first meeting of the association the objects of the organization were laid out and the deficiencies in British science gestured towards.

“Its objects are, -- To give a stronger impulse and a more systematic direction to scientific inquiry, -- to promote the intercourse of those who cultivate Science in different parts of the British Empire, with one another, and with foreign philosophers,-- to obtain more general attention to the objects of Science, and a

---

<sup>49</sup> Morrell and Thackray, “Biographical Appendix” in *Gentlemen of Science: Early Correspondence*, 6.

<sup>50</sup> Babbage, “State of the Royal Society in Particular,” in *Reflections on the Decline of Science in England, and on Some of Its Causes*. By Charles Babbage, 119–22.

<sup>51</sup> Doron Swade, “Babbage, Charles (1791–1871), mathematician and computer pioneer.” *Oxford Dictionary of National Biography*. (2004) <https://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-962>.

removal of any disadvantage of a public kind, which impedes its progress”<sup>52</sup>

The BAAS was to provide “a stronger impulse and a more systematic direction” to British science. The metaphor of impulse and direction are important because they are associated with nautical and therefore colonial endeavors. The BAAS’s main purpose was to unify British science in order to better advance communication and collaboration and thus the progressive development of knowledge. This knowledge was then to be applied in service of science and the nation. The British Association’s founding statement, therefore, was clear in its demand for inductive engagement — around the world — and that this was not an endeavor that could be completed in the comfort of the home with books.

“Great inventions of the age are not, with us at least, always produced in universities. The doctrines of ‘definite proportions,’ and of the ‘chemical agency of electricity,’ — principles of a high order, which have immortalized the names of their discoverers, — were not produced by meditations of the cloister.”<sup>53</sup>

Morrell and Thackray’s *Gentlemen of Science* is a classic study of Victorian science in which they provide a detailed account of the establishment of the British Association for the Advancement of Science (BAAS). Their dense and meticulous narrative argues that the scientific society was already a cultural institution central to Victorian social life when the BAAS was established in 1831.<sup>54</sup> The BAAS was established not just to direct the impulse of science but also observers of nature to a suitable position within the emerging scientific establishment. The ‘division of labor’ which is referred to was hierarchical and British science had suffered in the

---

<sup>52</sup> British Association for the Advancement of Science, *1831–32 Report, 1*. in Babbage’s *Reflections* the section “Professional Impulses” in the chapter “Of the Inducements to Individuals to Cultivate Science” Babbage proports the benefits of science as a distinct profession.

<sup>53</sup> Babbage, *Reflections on the Decline of Science in England, and on Some of Its Causes*, 21.

<sup>54</sup> Morrell and Thackray. *Gentlemen of Science*, 18–21.

past century because observers of nature extended beyond ‘a station within his reach.’<sup>55</sup> The position of these observers of nature within science depended upon their proven commitment to science. Demonstrating commitment to science was in many ways conflated with a commitment to truth itself. Commitment to science could be demonstrated not through monkish study of texts in isolated libraries but through active inductive methods that could only be done out in the world. In this period, all stations in science were increasingly placed out of reach of women and those who could not demonstrate total commitment to science because of established systems of social exclusion. It would be prohibitively inappropriate for a young woman to take a long-term sea voyage or climb the Alps independently of a male caretaker, (who would no doubt take credit for her work,) yet increasingly such demonstrations of heroic zeal were necessary to claim expertise.

The decline of science debate reflected anxieties regarding the ineffectiveness of British men of science during a time in which continental life sciences dominated theoretical conversations of nature. This movement demanded men of science embody a heroic ideal in order to be granted the moral authority equal to their truth claims. Doing good science was not enough, it must be the right kind of person doing the right kind of science for claims to moral authority to be taken seriously by scientific peers and a wider audience. Different men of science went about this in different ways depending on their social milieu, but each actively fashioned themselves to garner the respect of their peers and to therefore be granted access to the conversations that defined natural truths. Once this access was granted, they could also influence the standards by which men of science were measured. While these standards are historically

---

<sup>55</sup> British Association for the Advancement of Science, *1831–32 Report*, 20.

contingent and impacted by the intersection of gender, race, class, and age, the standard was particularly focused on the ability to experience and perceive the world objectively. Empirical investigation was exalted as the egalitarian weapon against the injustice of wrongly entrenched worldviews. The ideal man of science was not merely a keen reasoner but was to be the embodiment of an adventurous champion of truth itself.

As the British Association established itself as a forum for British Science, women were present at early meetings almost by accident. Men of science traveled to provincial Association meetings and as was customary in Victorian England, many of them brought their families, including of course their wives and daughters. Though at first women's presence seems to have been incidental, they contributed to the social milieu of meetings in a way that legitimized the meetings not just as professional but as a respectable activity for gentlemen and their families. After all the British Association's meetings were not just professional development or networking events like a modern conference, rather they were robust social gatherings designed to promote not just a unity of British science but also social cohesion of the group that was gathered.

In this setting, women did have a place, albeit one restricted to specific support roles which submerged the fact that they were participants at all. For example, the British Association came to rely on women's participation not just for social labor but also financially as the Association moved to sell 'ladies' tickets' for particular parts of the meeting.<sup>56</sup> These ladies tickets granted women access to view certain panels as an audience member but never as a participant in scientific discourse. Demand for this gendered access to meetings outstripped

---

<sup>56</sup> Morrell and Thackray. *Gentlemen of Science*. 149

supply and the ladies ticket proved to be a lucrative scheme for the association. Though the scope of participation for women was explicitly limited, many women were perfectly satisfied with this limited participation as a mere audience member, basking in the genius of learned men. On the other hand, the nineteenth century was not completely devoid of scientifically recognized women whose expertise could have benefitted contemporary men of science, had they been given the opportunity.

Notably, the British Association would not permit Mary Somerville, a well-recognized astronomer and mathematician, to attend the 1832 meeting at Oxford. Or, rather, she would have been permitted to attend the social (unscientific) parts of the meeting but would be barred from reading of papers which was where the serious scientific discourse took place.<sup>57</sup> Mary Somerville could not satisfy her scientific contemporaries, her work was critiqued as too accessible by David Brewster and by John Nichol for not being accessible enough.<sup>58</sup> The president elect of the time William Buckland, when pressed about Somerville's presence at the meeting, questioned whether women should be allowed to attend the meeting at all. Somerville was invited to the gathering but only in the same capacity as any other lady, as audience and socialite, and as a result she declined to attend the meeting at all. Buckland took her absence as tacit endorsement of the notion that women should be excluded from the meeting.<sup>59</sup> Notably Charles Babbage advocated for women to be allowed in some sort of assembly though not so much because of egalitarian commitments rather that he thought that women decorated the space

---

<sup>57</sup> Morrell and Thackray. *Gentlemen of Science*. 150.

<sup>58</sup> Richard R Yeo, *Science in the Public Sphere: Natural Knowledge in British Culture, 1800–1860* (Aldershot: Ashgate, 2002), 75.

<sup>59</sup> Buckland to Murchison, March 27 1832 and April 5, 1832. From Morrell and Thackray, *Gentlemen of Science*, 150.

they occupied in a way that inspired men of science to works of genius and also, more practically, more men could attend the meetings if their families were permitted to accompany them.<sup>60</sup>

Mary Somerville's exclusion from the serious business of science demonstrates how gendered expectations impacted scientific identity and success. Unlike Caroline Herschel, Somerville actively advocated for herself as a scientific mind, going so far as to end her first marriage because her husband was not sufficiently supportive of her scientific research and claiming all her work as her own.<sup>61</sup> Notably, her *On the Connexion of the Physical Sciences* was seen as an attempt to demonstrate the unity of scientific methodologies at a time when specialization seemed to increasingly fracture science into disparate disciplines. This was a goal ostensibly shared by the British Association, (and as indicated already, by the 'ingenious gentleman,' William Whewell.) Interestingly, another stated goal of the Association was to realize the Baconian vision of science as a collective endeavor therefore collaborative and open to the contributions of all patient students of nature no matter their station.<sup>62</sup> This stated goal of the British Association seems to be at odds with the ostracization of Mary Somerville, as she surely could have contributed to the collaborative production of scientific knowledge. Perhaps the British Association would have been more open to Somerville's contributions had she, like Caroline Herschel, convincingly performed the expected limitations of her gender by paradoxically making no claim to scientific knowledge. For women, scientific authority could

---

<sup>60</sup>Babbage to Daubeny April 28, 1832. And Daubeny to Babbage May 29, 1832 from Morrell and Thackray. *Gentlemen of Science*. 151.

<sup>61</sup> This is not to say Somerville did not achieve acclaim for her work. Both Somerville and Herschel were honored by the Royal Astronomical Society in 1835 however Herschel receive more recognition in her lifetime as her brother's assistant than for her stand-alone work.

<sup>62</sup> Yeo. *Science in the Public Sphere*. 72–75.

only be conferred, while for men, scientific authority could be emphatically claimed based on their proximity to the inductive and empirical traditions of Bacon and Newton which were coded as both British and masculine.

As the historian Rebekah Higgitt has pointed out, and as was made clear by Huxley and his contemporaries, the gendered nature of this identity was such that the British Association quickly moved not only to discourage and disallow women from participating as practitioners, but to marginalize them to the sidelines of the meetings, where they acted as onlookers, providing a suitable feminine admiring audience for the masculine performers.<sup>63</sup> Indeed, as Evelleen Richards has long since pointed out, Huxley was further instrumental in ensuring that, for all his promotion of a liberal education, women would be denied access to a scientific education on the same basis that he sought to provide it for men.<sup>64</sup>

I have chosen to focus on Huxley in particular because, as Paul White has shown, Huxley made such efforts to reframe the definition of what it meant to be a Victorian gentleman of science around contemporary ideals of manliness, but also because he struggled to do this convincingly. This was in large part not only because Huxley was so far removed from what it meant to be a gentleman by an older traditional definition, but because he was also not born into the middle class around which the new identity of the dedicated man of science was being formed. Huxley was working class, lacked land or inherited wealth, and had to work for a living. He took an appointment as assistant physician on the *H.M.S. Rattlesnake* when he was twenty-

---

<sup>63</sup> Rebekah Higgitt and Charles W. J. Withers, "Science and Sociability: Women as Audience at the British Association for the Advancement of Science, 1831–1901," *Isis* 99, no. 1 (March 2008): 1–27, <https://doi.org/10.1086/587538>.

<sup>64</sup> Evelleen Richards, "Huxley and Woman's Place in Science: The 'Woman Question' and the Control of Victorian Anthropology.," in *History, Humanity, and Evolution: Essays for John C. Greene*, ed. James Moore (Cambridge: Cambridge University Press, 1989), 253–84.

one years old.<sup>65</sup>

The idea of manly character was perhaps expounded most clearly by the influential Scottish sage and social commentator, Thomas Carlyle. As Michael Roper and John Tosh pointed out in their 1991 monograph *Manful Assertions*, Carlyle lauded manly displays and defined ideals of manliness across many of his works. In much of the scholarship on Carlyle, he has been characterized by his fascination with the public man and the virtues of work, while these views are no doubt accurate enough they submerge his conception of masculinity in his construction of the virtue of work.<sup>66</sup> For instance, Houghton characterizes Carlyle as among those who praised work as the pinnacle virtue of the period, but Houghton did so by appealing to Carlyle's religiosity.<sup>67</sup> Though Carlyle's conceptions of work were no doubt influenced by his religiosity; religiosity, veneration of work, and masculine ideals were not necessarily distinct influences. All of these conceptions are intimately tied to self-fashioning. This was especially apparent in Carlyle's *Heroes and Hero Worship*. The main premise of *Heroes and Hero Worship* was that throughout history, heroic men achieved greatness because of their extraordinary character. Heroic character came from talent but more importantly conscious development. Furthermore, reading accounts of adventure, in which daring men demonstrated heroic character developed heroic character in the reader by providing a model for how to assert masculinity and agency. "This kind of man is precisely he who is fit for doing manfully all things you will set him on doing. Intellect is not speaking and logicizing; it is seeing and ascertaining. Virtue,

---

<sup>65</sup> We might also usefully look to Huxley's colleague and friend, the Irish physicist John Tyndall, as a similar example, for he too participated in similar efforts to define a place for himself in British science, however, there is not space to tackle Tyndall in this dissertation.

<sup>66</sup> Michael Roper and John Tosh, *Manful Assertions: Masculinities in Britain Since 1800* (London: Routledge, 1991), 1.

<sup>67</sup> Houghton, "Work" in "Earnestness" in *Victorian Frame of Mind*, 242–262.

*Virtus*, manhood, *hero*-hood, is not fair-spoken immaculate regularity; it is first of all, Courage and the Faculty to *do*.”<sup>68</sup> Though ability to do and agency are not necessarily interchangeable, this implies that in order to be granted the respect necessary to exercise agency, a man had to first demonstrate the proper way of seeing by doing meaningful work in miserable conditions.

James G. Paradis paid particular attention to Carlyle’s influence on Thomas Henry Huxley’s self-fashioning when he argued that Huxley appropriated the rugged independence of Carlyle’s character as a suitable substitution for his own mental instability.<sup>69</sup> It has been observed by numerous historians that Huxley was influenced by the writings of Thomas Carlyle. White and Paradis explicitly point to extracts from Carlyle’s “Characteristics” which Huxley copied into his “Thoughts and Doings” in April of 1842 when he was just seventeen years old.<sup>70</sup> The section which Huxley copied into his ‘thoughts and doings’ journal at the age of seventeen reflect the formation of his standards of masculinity against which he measured himself. An important element of this masculine standard was the development of the internal sense of responsibility. Carlyle presented a masculine ideal for Huxley to compare himself to and use as a model which he could adapt to his skill set in order to advance, ostensibly independent of familial connections.

In a series of quotations copied from Carlyle, Huxley wrote “The ages of heroism are not ages of Moral Philosophy. Virtue, when it is philosophised of, has become aware of itself, is

---

<sup>68</sup> Discussion of Cromwell in Thomas Carlyle, *Heroes and Hero-Worship*. (London: Chapman and Hall, 1869), <https://catalog.hathitrust.org/Record/011600788>. 258

<sup>69</sup> James G. Paradis, *T. H. Huxley: Man’s Place in Nature* (Lincoln: University of Nebraska Press, 1978). 47–71. Though Carlyle deeply impressed Huxley and other contemporaries I take issue with Paradis’s claim that Huxley wholesale substituted his own personality, which Paradis characterizes as frankly neurotic, for Carlyle’s more indomitable personality. Carlyle was used as a model to influence Huxley’s development not as a wholesale personality to replace his own.

<sup>70</sup> Paradis, *T.H. Huxley*, 1. White, *Thomas Huxley*, 94–97.

sickly and beginning to decline.”<sup>71</sup> The passage continues in Carlyle’s *Miscellaneous writings* to cite how noble virtues are reduced to meager shells by the recognition thereof. “. . . humane Courtesy and Nobleness of mind dwindle into punctilious Politeness” and further “The barrenest of all mortals is the Sentimentalist. . . Does he not lie there as a perpetual lesson of despair, and type of bedrid valetudinarian impotence?”<sup>72</sup> Huxley seemed particularly impacted by this condemnation of sentimentality.

Later in the same volume of *Miscellaneous writings*, in the “Diderot” section, Carlyle describes the victory of a highlander over “a gentleman with gold rings,” who, chopping the gentleman’s hand clean off, picks it up, and places it in his pocket for later. “The force of Virtue\* could go no further. \*Virtus (properly manliness, the chief duty of man) meant in old Rome, power of fighting; means, in modern Rome, Connoisseurship; in Scotland, Thrift.” By Carlyle’s reckoning, then, virtue was quite literally synonymous with masculinity and a lack of virtue was a lack of masculinity. This characterization of manly character is prescriptive yet the flexibility of virtue allowed for the individual to express their value systems through masculinity.<sup>73</sup> The ways in which politeness was conceptualized show the flexibility of masculinity but also the ways men compared masculinities to create definition. It is often pointed out that femininity is defined by its relational status to masculinity but so too are masculinities

---

<sup>71</sup> As seen in White, *Thomas Huxley*, 7. Leonard Huxley, *Life and Letters of Thomas Henry Huxley — Volume 1* (Project Gutenberg, 2004), <http://www.gutenberg.org/ebooks/5084>, 13.

<sup>72</sup> Thomas Carlyle, *Critical and Miscellaneous Essays* (Boston: Phillips, Sampson, and Company, 1855), 298. Thomas Carlyle, *Characteristics* (Hoboken, N.J.: Generic NL Freebook Publisher, 2000), <http://libraries.ou.edu/access.aspx?url=https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=2008436&site=ehost-live>, 54.

<sup>73</sup> A good example is presented in Cohen’s *Politeness in Fashioning Masculinity* while the “French politeness” was considered to reflect the virtue of self-control, Englishmen viewed it as an effeminate substitution of the truth for amicability. See especially footnote 36 presents the French conception of politeness as manifestation of virtue

defined by their relationship to femininity, as well as to other framings of the masculine.

Laurence Klein asserts in the late-seventeenth century to early eighteenth century, that politeness in language was incorporated into social and political interactions as a result of philosophical shifts in the seventeenth century. Klein asserts that politeness reflected an effort to appropriate “the world of social, intellectual, and literary creation by gentlemen.”<sup>74</sup> Klein returned to ideas of “interactional” conceptions of socialization but it seems that “transactional” would be a more appropriate term considering the role politeness plays in the political economy in his account of the rise of politeness. “Politeness was associated with theatricality in social relations, where virtue insisted on sincerity” and the rise of the English gentleman was dependent upon reconciliation virtue and politeness which was achieved through representations of politeness as a fundamental yet formulaic rhetorical tactic of sociability.<sup>75</sup> Klein thus positioned politeness closer to functionality than it being merely ornamental. Interestingly he made no mention of gender or science in this account of gentlemanliness, a point that underscores Tosh’s claim that masculinity is invisible while ubiquitous.<sup>76</sup>

Klein emphasized that politeness became associated with gentlemanliness as a means to promote public relationships to benefit the individual ego while Michèle Cohen goes a step further to place politeness in the context of national identity and gender. By positioning masculine English politeness counter to effeminate French politeness Klein highlights the importance of national identity in building contemporary understandings of masculinity. This

---

<sup>74</sup> Cohen, *Fashioning Masculinity*. 42. Lawrence, Klein. “The Rise of ‘Politeness’ in England 1660-1715” (PhD diss., Shaftesbury, 1984), 30, 80-93.

<sup>75</sup> Klein, “The Rise of “Politeness” in England, 1600-1715,” 38.

<sup>76</sup> Tosh, “What Should Historians Do with Masculinity?,” 180.

comparison between the French and British politeness and masculinity is especially productive when considering the Victorian context. The Decline of Science debate displays exactly this kind of nationalist sentiment. British men of science were especially frustrated with the state of British science when compared to the philosophical contributions coming from the continent which had transformed the intellectual culture of Europe in the previous centuries.

Cohen analyzes the national identity of his subjects and how that identity interacted with conceptions of politeness. Cohen presents on one hand an Aristocrat, Lord Chesterfield, who treats politeness as a necessary self-fashioning to make oneself agreeable while on the other hand the educator, David Fordyce, who Cohen says is from Edinburgh believes this sort of politeness is plain deception, a currency in the market of sociability. Cohen does not delve into the culture at Edinburgh that could have contributed to the narrative of malicious decadence of the aristocracy. Historically Edinburgh has a reputation for being a center of Enlightenment thought, this association may have been why Cohen mis-attributes Fordyce to Edinburgh when he actually taught moral philosophy at the second postmedieval university established, Marischal College in Aberdeen. This may seem an insignificant oversight but the implications are not insignificant. It indicates that the “English educator” side of this comparison may not be as main stream as implied. Though the *Dialogs* which Fordyce’s ideas was a popular publication for which Fordyce is most well-known for.<sup>77</sup>

Cohen spends time exploring the effort to redefine politeness to reflect English values through education. Though it is not her focus she identifies those different types of education as

---

<sup>77</sup> Ruston, "Fordyce, David (bap. 1711, d. 1751), university teacher and writer on education." *Oxford Dictionary of National Biography*.

vital to the English gentleman. Cohen identifies liberal education in classics as instrumental in developing a young man into a gentleman. It was thought that through reading classic representations of virtue, young men develop social and political virtue.<sup>78</sup> This line of analysis presents context to the position of politeness in society before the social and political crises of the long nineteenth century. Even before the articulation of positivist philosophy in the middle decades of the century the conventions of power were being questioned by those most invested in the exploration of moral truths.

Gaining membership to these institutions was political in nature and at first reflected gentlemanly codes of politeness, a code to which Huxley had neither allegiance nor reputation. Huxley's irreverence paired with his irreligion to quite clearly detract from his overall ability to perform adequately as a gentleman of science. In the generation that had preceded Huxley, there was an unspoken protocol when criticizing another's arguments.<sup>79</sup> This protocol demanded reverence for those who produced ideas, as a reflection of the individual's station, not necessarily the fortitude of their argument and a militant reverence for foundational works and the station of those who produced them. Publicly disparaging a gentleman of science was outrightly improper. In 1856, J.D. Hooker attempted to nominate Huxley for a position within the Athenaeum which was an influential club for great minds of the time. In the process he corresponded with Charles Darwin who at this point was an established naturalist and member of the Athenaeum. Darwin's responses below are written nearly two weeks apart and show how central politeness in criticisms was to respectability and access.

---

<sup>78</sup> Cohen, *Fashioning Masculinity*, 42–53.

<sup>79</sup> Although Bacon had been quite clear about this in *Novum Organum*, a work that was lionized as the exemplar of British inductive science well into the nineteenth century.

“With respect to Huxley, when I bethought me of how Owen would look & what he would say. Cannot you fancy him, with a red face, dreadful smile & slow & gentle voice, asking, “Will M<sup>r</sup> Crawford tell me what M<sup>r</sup>. Huxley has done, deserving this honour; I only know that he differs from, & disputes the authority of Cuvier, Ehrenberg & Agassiz as of no weight at all”.— I was puzzled, & could refer him only to some *excellent* papers in R. Trans. for which the medal had been awarded. But I doubt *with an opposing faction*, whether this would be considered enough, for I believe real scientific merit is not thought enough, without the person is generally well known; it would be bad to get him proposed & then rejected; & Owen is very powerful.”<sup>80</sup>

“The Lectures strike me as very clever. Though I believe, as far as my knowledge goes that Huxley is right, yet I think his tone very much too vehement, & I have ventured to say so in a note to Huxley.— I had not thought of these Lectures in relation to the Athenæum, but I am inclined quite to agree with you & that we had better pause before anything is said. It might be urged as a real objection the way our friend falls foul of every one (N.B I found Falconer very indignant at the manner in which Huxley treated Cuvier in his R. In<sup>n</sup>. Lecture; & I have gently told Huxley so.) I think we had better do nothing, to try in earnest to get a great Naturalist into Athenæum & fail, is far worse than doing nothing—How strange, funny & disgraceful that nearly all — (Faraday, Sir J. Herschel at least exceptions) our great men are in quarrels in couples; it never struck me before.”<sup>81</sup>

These correspondences highlight an important distinction between being recognized as a capable man of science and being accepted into the fold of those who defined science in the period. Darwin recognizes Huxley’s original contribution to science and Huxley’s intellectual faculties in relation to the science he does is never called into question. The issue of sociability and politeness seems to be at the center of the trepidation surrounding Huxley’s acceptance into the high society of science. He was known to be sharp witted but it was his sharp tongue that caused even his friends to wonder if he would be able to conduct himself in a manner befitting a gentleman of science. Ultimately Huxley was not put forth for election to the Athenaeum Club in

---

<sup>80</sup>Darwin to Hooker. Huxley had frequently attacked Owen as a mere mouthpiece of authority, making a powerful enemy in Owen. Darwin Correspondence Project, “Letter no. 1870.”

<sup>81</sup> A letter from Darwin to J.D. Hooker on Hooker’s attempt to put Huxley forth for appointment to the Athenium Society. Darwin Correspondence Project, “Letter no. 1876.”

1856 though he would eventually be elected independently of the normal balloting by membership in 1858.<sup>82</sup> Darwin makes reference to Huxley's tendency to attack ideas regardless of their respectable foundations. Owen is a central figure in this narrative about Huxley's failure to secure a position in the Athenaeum Club in 1856. This event offers an important insight into the state of not only Huxley's reputation but the intellectual traditions associated with not only science but masculinity as well. Many Historians including Paul White and Adrian Desmond have analyzed the contentious relationship between Thomas Huxley and Richard Owen.<sup>83</sup> Though their accounts address the ways that Huxley developed an antagonistic relationship with the scientific giant, my account of Huxley's construction of scientific masculinity reveals how important gendered assumptions were in the process of unseating such a giant and installing one's self. Huxley's recurring critique of Owen was that he was too attached to old systems of patronage (and politeness) which compromised Owen's ability to earnestly investigate scientific truths.

By the late 1860s Thomas Huxley had established himself in a variety of scientific and cultural institutions. An array of institutional appointments provided Huxley with the financial backing to support himself while also granting these men a degree of intellectual authority.<sup>84</sup> The authority of these institutions are extensions of the moral authority of truth itself. This was contrasted with ecclesiastic institutions of learning in that these new institutions claimed to exist to exalt truth not themselves or their authority. In Huxley's view, aristocratic institutions were incapable of the pursuit of truth because their allegiance to established authority which reduced

---

<sup>82</sup> Adrian J Desmond, *Huxley: From Devil's Disciple to Evolution's High Priest* (Reading, Mass: Perseus Books, 1999), 226.

<sup>83</sup> White, *Thomas Huxley*, 38-45. Desmond, "The Nature of the Beast" in *Huxley*, 216-230.

great thinkers to little more than mouthpieces of establishment. This was one of his main criticisms of Richard Owen, who, like him, came from a working-class background but was beholden to his patrons. So even though Owen gained his station in science through independent merit his reliance on the money of aristocratic institutions rendered him in a state of permanent “bedrid valetudinarian impotence.”<sup>85</sup> This criticism echoes the Carlylean quotes Huxley scribbled in his journal twenty-five years earlier. Work that was influenced by patronage was “sickly” and lacked the manly inner directedness and purpose which is central to Huxley’s image as a man and a man of science. Owen contended that politeness and the reverence it entails should be maintained while Huxley held that frankness was more central and made his career critiquing his contemporaries in that light. This distinction made between intellectual independence and patronage reflects how the ideal of masculine independence interacted with the logistics of male responsibility.

Huxley’s scientific credentials were recognized but his personal credibility less so in the 1850’s and 60’s. Perhaps had he been able to disseminate the unpublished manuscript of his travel narrative on the *Rattlesnake*, he may have enjoyed more social credibility. Though he dutifully suffered and collected facts abroad and delivered them back to the metropole, perhaps his inability to tell his heroic tale publicly, impacted his personal credibility and therefore his access to the benefits of homosocial associations such as the *Athenaeum*, at least temporarily.

---

<sup>85</sup> Carlyle, *Critical and Miscellaneous Essays*, 298–299.

### **SECTION THREE: The Scientific Voyage Narrative as Masculine Performance**

Masculinity was essential to the remaking of British science in the years that followed Babbage's publication of his concerns about the decline of science in Britain. This was true on at least two levels. First, it was explicit in the structure of the newly formed British Association for the Advancement of Science. As I have shown in section two, above, the British scientific community became increasingly unfriendly to the contributions of upper-class women, with only a few exceptions, it was the men who got to do science, women were allowed to participate in its exhibition, but only as audience members, relegating women to the role of window dressing — an appropriately female appreciative audience for the performance of masculine science. The vision of science that the British Association embodied was a decisively masculine one. This not only served to exclude the small group of affluent white women who may have been permitted active participation as practitioners in the preceding century, but, as Higgit has shown, served to highlight the masculinity of the men in their relief. In my second section, above, using Huxley as an example, I have made the case that these gendered expectations and standards were woven into the very ideal of the man of science during the mid-nineteenth century. Gendered references served not only as a standard to which young men of science sought to aspire, but as a standard by which they could be judged, and by which they could judge others. Further, though, and as I shall go on to show in this chapter, one way in which aspirants could exhibit their manliness was through a scientific voyage. Many influential Victorian men of science participated in voyages early in their careers, this includes Charles Darwin, Thomas Huxley, Joseph Hooker, Alfred Wallace, and many more. Further, though, the writing up of the voyage for public consumption became in itself an important public performance of science. Public facing travel narratives asserted the independence, heroism, stoicism, and specifically English virtues of this generation

of scientific men while private travel diaries reveal how even the most venerated men in Victorian science, doubted their own masculinity as early career scientific practitioners and therefore their ability to do science at all.

Precepts of manliness were woven into scientific methodologies during and throughout the Victorian period. Even as scientific practices became increasingly specialized and seemingly disparate, a common archetype was evoked as constitutive of scientific identity; that of the heroic voyager. Necessarily manly, paternalist and colonial in construction, building on assumptions that relegated women to supposedly safer spaces, the heroic voyager in scientific contexts materially supported British science by risking life and limb to collect useful facts. In the wake of Alexander von Humboldt's popular *Personal narrative of travels*, voyages emerged in the early-nineteenth century as a scientific opportunity which granted mere adepts the chance to demonstrate not just their scientific reasoning and skill but also their mettle against the awesome force of nature.<sup>86</sup> It has been noted by Darwin scholars such as Robert Richards that Darwin was profoundly influenced by German romanticism.<sup>87</sup> Though this view is not universally accepted by Darwin scholars; (Michael Ruse contested the idea that Darwin was more influenced by German Romanticism than British empiricism.)<sup>88</sup> Sandra Herbert has specifically highlighted the influence of Humboldt's travel narrative on Darwin's own as well as its impact on Darwin's assessment of the species question.<sup>89</sup> Darwin explicitly cited Alexander

---

<sup>86</sup> Darwin mentions Humboldt in *Voyage of the Beagle* 22 times, mostly pointing out the ways Humboldt's narrative informed his own. Darwin, *Autobiography*, Pp 67-68. Darwin, *Voyage of the Beagle*.

<sup>87</sup> Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*, Science and Its Conceptual Foundations (Chicago: University of Chicago Press, 2002), 511–554.

<sup>88</sup> Michael Ruse, "The Romantic Conception of Robert J. Richards," *Journal of the History of Biology* 37, no. 1 (2004): 3–23, <https://doi.org/10.1023/B:HIST.0000020389.71636.cc>, 3-4.

<sup>89</sup> Sandra Herbert, "The Place of Man in the Development of Darwin's Theory of Transmutation: Part I. To July 1837," *Journal of the History of Biology* 7, no. 2 (1974): 227, <https://doi.org/10.1007/BF00351204>.

Humboldt as an idol in his *Autobiography* “I formerly admired Humboldt; I now almost adore him; he alone gives any notion of the feelings which are raised in the mind on first entering the Tropics.”<sup>90</sup> Humboldt’s fame and influence on scientific culture was well recognized, a fact that is apparent in William MacGillvray’s introduction to an English edition of *The Travels and Researches of Alexander von Humboldt*. This travel narrative, and travel narratives more generally, occupied the genres of scientific research as well as adventure storytelling. Since travel narratives were explicitly both popular and scientific, this situated authors of travel narratives as purveyors of unique knowledge, knowledge that was only accessible through masculine experiences deemed sufficiently heroic.

“The celebrity which Baron Humboldt enjoys, and which he has earned by a life of laborious investigation and perilous enterprise, renders his name familiar to every person whose attention has been drawn to political statistics and natural philosophy... works of imagination have in great measure given place to those occupied with descriptions of nature, physical or moral, -and the phenomena of the material world now afford entertainment to many who in former times would have sought for it at a different source. Romantic incidents, perilous adventures, the struggles of conflicting armies, and vivid delineations of national manners and individual character, naturally excite a lively interest in every bosom, whatever may be the age or sex; but, surely, the great facts of creative power and wisdom as exhibited in regions of the globe of which they have no personal knowledge, are not less calculated to fix the attention of all readers minds... this abridged account of the travels of Humboldt will prove beneficial in diffusing a knowledge of the researches of that eminent naturalist.”<sup>91</sup>

In William MacGillvray’s introduction to Humboldt’s travel narrative women are implicitly highlighted as an audience for this specific account of scientific knowledge produced

---

<sup>90</sup>Charles Darwin, *Autobiography and Selected Letters* (New York: Dover Publications, 1958), 24, 141. <https://catalog.hathitrust.org/Record/001489936>.

<sup>91</sup> Preface written by William Macgillvray in October 1832 (Edinburgh) Humboldt, Alexander von. *The Travels and Researches of Alexander von Humboldt: With a Narrative of Humboldt’s Most Recent Researches, Including His Celebrated Journey to the Ural Mountains, and the Caspian Sea, Etc.*, 5–7

during Humboldt's voyage but also travel narratives generally. But also, Humboldt exposed naturalists to genre conventions of the travel narrative but Darwin and his peers utilized these conventions to portray their own scientific voyages as especially English and especially manly.<sup>92</sup>

The voyage was a shared experience among a number of prominent men of science, Darwin, Huxley, Hooker, and Wallace each had this experience, and Darwin noted that it had taught him more than any other experience in his education or training about how to perform good science.<sup>93</sup> However that is not to say that merely surviving a perilous voyage and completing basic scientific tasks ensured a venerable scientific reputation as Charles Babbage reminded his contemporaries in his *Reflections on the Decline of Science* that "...A certain quantity of scientific knowledge is of course possessed by individuals in many professions; and when added to the professional acquirements of the army, navy, or to the knowledge of the merchant is highly meritorious: but it is obvious that this may become, when separated from the profession, quite insignificant as the basis of scientific reputation."<sup>94</sup>

Writing and publishing a travel narrative could establish an adolescent adept as a bona fide man of science both in the general public and within particular professional circles. Though scientific publishing through learned societies like the Royal Society's *Philosophical Transactions* or the *Quarterly Journal of the Geological Society* were major modes of transmitting facts gathered on the voyage, a travel narrative offered a distinct opportunity to

---

<sup>92</sup> Had I more space an in-depth comparison between Darwin and Humboldt's travel narrative could show how the travel narrative genre developed in the period between their publication to bolster the authority of British men of science. For now, that's speculation.

<sup>93</sup> Iain McCalman, *Darwin's Armada: Four Voyages and the Battle for the Theory of Evolution*, 1st American ed.. (New York: W.W. Norton & Co., 2009), <https://openlibrary.org/books/OL23217928M>. "The voyage of the *Beagle* has been by far the most important event in my life, and has determined my whole career" from Darwin, *The Life and Letters of Charles Darwin*, 51.

<sup>94</sup> Babbage, *Reflections on the Decline of Science in England, and on Some of Its Causes*, 11–12.

establish not just the veracity of scientific claims but also an indomitable public persona, granting the scientific practitioner a degree of legitimacy which he might not have otherwise enjoyed. This longform and often quite informal format included important qualitative data regarding local geology, zoology, and botany, but also anthropological episodes which allowed the provision of striking incidences of manly science in action, in relief of both Indigenous people and fellow sailors.

While a longer study might reasonably provide a detailed survey of a number of these texts, here I have space only to engage with two. Darwin's *Journal of Researches*, (later published for public consumption as the *Voyage of the Beagle*), is my starting point because although it was certainly not the first of this genre, — Darwin had been inspired by Humboldt's own, and we can think too of Captain James Cook's and the George Forster's accounts in the eighteenth century, — Darwin's narrative was taken very much as a model by those aspiring British men of science who travelled after him.<sup>95</sup> I'll also discuss Huxley's travel narrative, *Diary of the Voyage of H.M.S Rattlesnake* published posthumously by his son Julian Huxley. Although it was not published in his lifetime, more work has been done on Huxley in terms of his involvement in becoming — and in defining — what it meant to be a man of science in the mid-Victorian period, and so his own notes, diaries and eventually published papers are a useful focus here. Huxley's travel narrative was published as an homage to a scientific giant, after his death, while Darwin's travel narrative was published as a foundation for his scientific reputation,

---

<sup>95</sup> The earliest title for the *Voyage of the Beagle* was *Journal and Remarks* in the third volume of *The narrative of the voyages of H.M Ships Adventure and Beagle* (1839), since then the name of the publication has changed 4 times. First *Journal of researches into the geology and natural history* (1839)..., *Naturalist's voyage Journal of researches into natural history and geology...* (1845), *Naturalist's Voyage Around the World* (1860), *The Voyage of the Beagle* (1905).

at the beginning of his career. These two travel narratives can be contrasted not just in that their authors were in very different socioeconomic positions and Huxley belonged to the scientific generation after Darwin, but also in authors' purpose. Huxley's journal was private while Darwin's was written for publication. However, both exhibit the importance of Victorian precepts of manliness in the self-fashioning of men of science, specifically virtues such as independence and stoicism in the face of danger. Darwin's public travel narrative seems to assert that Darwin possessed these virtues while Huxley's private travel journal expresses doubt and fear that he did not possess those virtues that were the earmark of a man of science.

Travel narratives are perhaps a vestige of diaries of aristocratic men coming of age and going on a grand tour of Europe. Darwin's own travel narrative was based on a diary in which he kept track of the daily happenings on the *Beagle*, as was Thomas Huxley's, though the *Diary* was not edited and published to establish his scientific credentials early in his career. Huxley's experience providing medical care on a leaky ship for long hours was not comparable to the aristocratic grand tour. Charles Darwin's experience however is more comparable to this aristocratic rite of passage. Not that Darwin's time at sea was a pleasure-cruise, rather that the scope of his responsibilities on the ship was limited to his own natural history research and social obligations of a gentleman. Huxley had to provide medical care which was hard and dirty work however he was unconcerned with maintaining social relationships with his shipmate "Save the necessary courtesies of life."<sup>96</sup>

Darwin was the *Beagle's* main naturalist while on the *Rattlesnake* that position was occupied by John MacGillivray and Huxley collected specimens and theorized in addition to

---

<sup>96</sup> Thomas Henry Huxley, *Diary of the Voyage of H.M.S Rattlesnake*, ed. Julian Huxley and Henrietta Huxley (Garden City, N.Y.: Doubleday, Doran & Co., 1936), 15.

fulfilling his responsibilities stitching up sailors.<sup>97</sup> Darwin was able to abandon medicine and focus on natural history, Huxley could not. Even when Huxley was able to do scientific work it was always tethered to his medical work. Huxley focused morphology and anatomy, which methodologically share much in common with medicine, specifically dissection and drawing. While Darwin was able to be much more general with his study and collection practices, positioning him to make claims about the immutable laws of nature.

This disparity is particularly apparent when comparing Darwin's collection practices to those of Huxley's.<sup>98</sup> Darwin and Huxley each engaged in scientific research on their voyage that demanded the collection of facts and specimens to corroborate those facts, however Darwin was able to collect and develop a philosophy of naturalism as his primary occupation as it was constitutive of his role on the HMS *Beagle*. It could be assumed that since Darwin could focus on naturalism exclusively that he could collect more specimens but although he was there as a naturalist, which guaranteed him an avenue for publishing his findings via his patronage by Admiralty, he was also there as a gentleman.<sup>99</sup>

Darwin had servants who did some of his collecting for him, in an autobiographical account, Darwin describes how his "love for science gradually preponderated every other taste" namely his love of shooting. Shooting occupied a very specific space in Charles Darwin's

---

<sup>97</sup> Ralph, "MacGillivray, John (1821–1867), natural history collector." In *Oxford Dictionary of National Biography*.

<sup>98</sup>For more on Darwin's collection practices on the Beagle see Sandra Herbert, "'A Universal Collector': Charles Darwin's Extraction of Meaning from His Galapagos Experience," in *Proceedings of the California Academy of Sciences*, vol. 61, 4, 2010, 45–68. Herbert builds on Melinda Fagan's "Wallace, Darwin, and the Practice of Natural History which compared the collection practices of Charles Darwin's Beagle voyage collection to that of Alfred Wallace which contained at least ten times as many specimens as Darwin collected before Wallace's specimens were lost in a shipwreck, which he narrowly escaped with his journals.

<sup>99</sup> John van Wyhe, "'My Appointment Received the Sanction of the Admiralty': Why Charles Darwin Really Was the Naturalist on HMS Beagle," *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 44, no. 3 (September 2013): 316–26, <https://doi.org/10.1016/j.shpsc.2013.03.022>.

development. He picked up shooting around the time he abandoned his medical studies, years before his *Beagle* voyage in 1827. Janet Browne characterizes young Darwin as too ‘scrupulous’ and ‘squeamish’ for medicine and Browne points out the paradoxical nature of Darwin’s retreat into the blood sport of shooting.<sup>100</sup> I’m not convinced that it was entirely Darwin’s earnest disgust and compassionate sensibility that pulled him away from studying medicine, rather that his lack of interest and his recognition of his class position which drove him away from medicine. At this time, he complained that his medicine coursework was ‘incredibly dull.’<sup>101</sup> In light of contemporary understandings of scientific masculinities of the period and Darwin’s immaturity as an eighteen-year-old, the process of abandoning medicine and taking up natural history was a particularly class-based negotiation of scientific masculinity. In many ways, shooting was not just an escape from the drudgery of insufferable lectures but a vital prop in Darwin’s renegotiation of his identity to include the childlike wonder he felt during collecting without sacrificing much respectability.

Shooting is essential for a naturalist collecting animal specimens, particularly birds, however shooting was and remains an aristocratic past time in England. When Darwin started shooting in earnest, he kept an in-depth count of every bird he shot, not of their species and geographic location but only that he shot a bird of some sort.<sup>102</sup> This is an indication that though this past time is a practice of natural history, to Darwin it was social activity to share with his peers. The count was for bragging rights more than fact finding.

Darwin described his love of shooting and shooting season. He described how at the

---

<sup>100</sup> Janet Browne, *Charles Darwin: Voyaging: Volume I of a Biography* (New York: Knopf: Distributed by Random House, 1995), 63–64.

<sup>101</sup> Darwin, *Autobiography*, 52.

<sup>102</sup> *Ibid.* 54.

beginning of the voyage he did all the shooting himself but had to eventually delegate the task to his servants as he devoted his time to more philosophical and arduous task of cataloging and the surveying the geological structure of the country.<sup>103</sup> Though this shift away from shooting may seem like a step away from established norms of masculinity for a man of his station it actually harkens to an older more specific masculinity, that of the aristocratic collector of the 18<sup>th</sup> century.<sup>104</sup>

Darwin had a lot of help on the *Beagle*, specifically he had assistance with the labor of the science he did on the *Beagle* while Huxley was wholly responsible for the physical labor of collecting as well as the philosophical labor of his science. Being a gentleman implied a degree of dependence on those around him to facilitate the quotidian demands of a gentleman but also ensured a degree of assistance with scientific work. In fact, though Darwin had been assigned a sailor to assist him by the captain but that assistance proved to be insufficient and in May of 1833, after two years on the *Beagle*, he requested funds from his family to pay a second servant sixty pounds per year, in addition to his existing expenses of two-hundred pounds per annum.<sup>105</sup>

In Huxley's travel narrative he openly expresses doubt and fear for his scientific future because of the financial risk of doing science in this period, a risk that Darwin did not have to take because of generational wealth. Huxley had no financial reserve to draw from and worried that his scientific identity may require him to make material sacrifices, that may undermine other precepts of English masculinity more generally. Specifically, that he be financially stable before marrying, a problem that became particularly pressing when Huxley met Henrietta Hawthorn in

---

<sup>103</sup> Ibid, 29.

<sup>104</sup> Barnett, Lydia. "Terrestrial Labors: Working and Knowing the Earth in the Enlightenment," (Northwestern University), Lecture, March 4, 3:30 pm–5:00 pm via Zoom.

<sup>105</sup> Darwin, *Life and Letters*, 217.

Sydney, Australia and professed his intention to marry her, after meeting her half a dozen times.<sup>106</sup> He was twenty-two at the time. Science was, even in 1848 nearly 20 years after the establishment of the BAAS, not a good way to make money. A career in science was high risk with very few respectable paid positions available in Britain. Huxley hoped to build a reputation on his scientific prowess yet he struggled to maintain confidence in his work as his romance with Henrietta Hawthorn raised the stakes of that work.

“Have I the capabilities for a scientific life or only the desire and for it springing from a flattered vanity and self-deceiving blindness? Have my dreams been follies or prophecies? If in old times these questions have pressed themselves painfully upon my mind when my own fate was all that hung in the balance, how shall I cease to think over them now that the fate of one whom I love better than myself depends upon their right or wrong solution? There is something noble, something holy, about a poor and humble life if it be the consequence of following what one feels and knows to be one’s duty. And if a man do possess a faculty for a given pursuit, if he have talent intrusted to him, to my mind it is distinctly his duty to use that to the best advantage, sacrificing all things to it. But if this capacity be only fancied, if his silver talent be nothing but lead after all—no Bedlam fool can be more worthy of contempt. The man who has mistaken his vocation is lost and useless. He who has found it is, or ought to be, the happiest of happy.”<sup>107</sup>

Huxley’s anxieties were justified as he and Henrietta struggled through a very long engagement, even by Victorian standards, of over six years. This long engagement was due in part because of Huxley was unable to secure a reliable scientific position even as he was a venerated man of science. He was elected a fellow of the Royal Society at a youthful age of twenty-five but could not support a new family on accolade alone, in fact the cost of his fellowship, fourteen pounds a year, nearly a month’s wages, was nearly prohibitive but he hoped that infiltrating the highest scientific organization in Britain

---

<sup>106</sup> Desmond, *Huxley*, 70–74.

<sup>107</sup> Huxley, *Diary of the Voyage of H.M.S Rattlesnake*, 92–93.

would be worth the expense.<sup>108</sup> Later in life, even after Huxley was established, he would complain of his lack of capital and he and Henrietta would look to Darwin's wealth with no small degree of envy.<sup>109</sup> The fact that Darwin had what Huxley needed, capital, was not lost on contemporaries and one of Darwin's mentors, Charles Lyell, noted that "If he had leisure like you and me... what a position he would occupy!"<sup>110</sup>

Though Huxley received much less material assistance on his voyage than Darwin did, in his *Diary* he tended to acknowledge the contributions of others, even women in his personal life. On his twenty second birthday, near the beginning of his journey he reflected on his life, past and future.

"Twenty-two years ago I entered this world a pulpy mass of capabilities, as yet unknown and save by motherly affection uncared for. And had it not been better altogether had I been crushed and trodden out at once? Nourishing me up, was as though one should pick up a stray egg, unconscious of whether dove's or serpent's, and carefully incubate it. And here I am what a score of years in the world have made me—such a bundle of glorious and inglorious contradictions as men call a man."<sup>111</sup>

Though he speaks of 'motherly affection' it should be understood to address the contributions of his sisters as well. It was his sister Lizzie who supported him emotionally and professionally as he tried to build a career in science.<sup>112</sup> Despite the self-aggrandizing rhetorical flair of the final line, this passage exhibits a small bit of humility that is quite contrary to the indomitable persona "Darwin's Bulldog" that he would later

---

<sup>108</sup> Desmond, *Huxley* 162

<sup>109</sup> *Ibid*, 323.

<sup>110</sup> Lyell, *Life and Letters of Charles Lyell* seen in Desmond, *Huxley*, 323.

<sup>111</sup> Huxley, *Diary of the Voyage of H.M.S Rattlesnake*, 26.

<sup>112</sup> Through her husband, Lizzie secured a medical apprenticeship for Huxley which was one of the critical junctures that allowed him to deepen his scientific understanding and build his scientific reputation. Huxley, *Diary of the Voyage of H.M.S Rattlesnake*, 2.

claim. In many ways this appeals to the Carlylean idolization of work and independence but at the age of twenty-two, Huxley was not just interested in presenting himself as either serpent or dove he himself seems unsure what he is in the context of science and if he has the skill to meaningfully contribute to the collective enterprise of truth.

Darwin did not acknowledge the assistance he received on the *Beagle* in his publication of his *Journal of Researches*. Though his accounts of his time on the *Beagle* occasionally mentions his servants he does not mention his peers on the ship who assisted him. A point that Captain Fitzroy admonished Darwin for in an 1837 letter in which he charged Darwin with slighting both Fitzroy himself and the crew that assisted Darwin. Fitzroy proclaimed himself “astonished at the total omission of any notice of the officers— either particular—or general.— My memory is rather tenacious respecting a variety of transactions in which you were concerned with them; and others in the *Beagle*.”<sup>113</sup> It is particularly important to note that on this *Beagle* voyage, unlike Fitzroy’s previous *Beagle* voyage, sailors were permitted to keep specimens to sell themselves, but priority was given to Darwin.<sup>114</sup> So, Darwin’s shipmates would help with collection and were technically allowed to sell the specimens themselves but they gave him first choice of the specimens that they had collected. This certainly cost his shipmates time, energy, and coin and yet Darwin did not acknowledge them in his account. The lack of recognition of this fact clearly struck Fitzroy as contemptible as evidenced by the way he confronted Darwin directly in their later correspondence, yet these sorts of omissions were not damning and certainly not publicly aired. And it seems Fitzroy got over it after Darwin was sufficiently

---

<sup>113</sup> Darwin’s response to this charge is missing but presumed ‘from the heart’. Darwin Correspondence Project, “Letter no. 387.”

<sup>114</sup> Wyhe, “‘My Appointment Received the Sanction of the Admiralty’: Why Charles Darwin Really Was the Naturalist on HMS *Beagle*,” 316–26.

deferential, but this omission frames Darwin not as a member of a team but as a solitary investigator uncovering the secrets of the world with the sheer force of his masculine virtue. Darwin did not acknowledge the help of his ship mates and he certainly did not acknowledge the support he received from women in his personal life in this travel narrative. Huxley was much more independent in his collection practices in part because of his subordinated position as physician but also because of his rather ungentlemanly aversion to socializing with his shipmates.<sup>115</sup> Darwin was chosen for the role on the HMS *Beagle* in part because he was thought to be a suitable companion for captain Fitzroy. Young Darwin was a suitable companion for the captain because of his scientific connections from his time studying at Cambridge but also because his mentor the botanist John Henslow recognized him as a “*gentleman... (and) a man of zeal & spirit.*”<sup>116</sup>

Though the heroic story aspiring men of science told about themselves had to be factual in logistics and activity, looking to Darwin’s travel narrative it is apparent that omissions and exaggerations were integral to the adventure storytelling elements of travel narratives. Travel narratives such as Charles Darwin’s *Voyage of the Beagle* were wildly popular not so much for their scientific value but for their entertainment value. Through these omissions and exaggerations men of science told a more interesting story and elevated their epistemological position relative to their colleagues and competitors. This practice eventually installed their own values into the institutions credited as the sites of knowledge production in the nineteenth century.

Though Darwin was describing exoticized experiences that captured public interest, it

---

<sup>115</sup> Huxley, *Diary*, 15.

<sup>116</sup> Darwin Correspondence Project, “Letter no. 105.”

was important to maintain an earnest tone which was ostensibly unsensational when describing the places and people that he encountered on his voyage. A plain and unostentatious style allowed for the reader to take the content of the narrative as both factual and unassuming.<sup>117</sup> This matter-of-fact way of describing either natural wonders or man-made horrors did rhetorical work for the author in asserting not just his own heroism but also his stoic resolve in the face of shocking phenomena. Travel narratives necessarily relied on colonial structures that exoticized and eroticized tropical environments and peoples to enforce colonial superiority.<sup>118</sup> Those structures were submerged by the matter-of-fact tone of travel narratives. This tone highlighted English sensibility while it submerged not just colonial structures but also the subjectivity of the author. Even as Charles Darwin describes his outrage when witnessing the violent subjugation of Indigenous peoples, it is still characterized not as a feeling but a violation of English morality that demanded a degree of benevolence towards the people one victimizes.<sup>119</sup>

Darwin's interactions with the Indigenous people of Tierra del Fuego are emblematic of the ways colonial programs of human improvement casts agents of British colonialism as heroes.<sup>120</sup> Darwin briefly acknowledged the Indigenous people that had been taken from the area in a previous voyage and continued to be enslaved by Captain Fitzoy though he claimed that this

---

<sup>117</sup> Fulford, Tim. *Literature, Science and Exploration in the Romantic Era: Bodies of Knowledge* / Tim Fulford, Debbie Lee and Peter J. Kitson. Cambridge Studies in Romanticism 60. Cambridge, U.K.; New York: Cambridge University Press, 2004, 2.

<sup>118</sup> Arnold, "'Illusory Riches': Representations of the Tropical World, 1840–1950,".

<sup>119</sup> Darwin, *Voyage of Beagle* "all the women who appear above twenty years old are massacred in cold blood! When I exclaimed that this appeared rather inhuman, he answered, "Why, what can be done? they breed so!...Every one here is fully convinced that this is the most just war, because it is against barbarians. Who would believe in this age that such atrocities could be committed in a Christian civilized country? The children of the Indians are saved, to be sold or given away as servants, or rather slaves for as long a time as the owners can make them believe themselves slaves; but I believe in their treatment there is little to complain of." 97

<sup>120</sup> The use of the term Fuegian is not unproblematic. Fuegian may refer to a specific group of Indigenous inhabitants of Tierra del Fuego, the Yahgan people, however I maintain usage of Fuegian because it is a more general designation for the inhabitants of Tierra del Fuego area due to ambiguity and to a degree ignorance regarding the populations that Darwin is actually referring to.

was an act of benevolence as Fitzroy paid for their education in hopes that they could be returned to Tierra del Fuego and civilize their communities. Fitzroy claimed that repatriating Jemmy Button (who had been purchased for a pearl button) and Fuegia Basket was a primary goal of the voyage. Darwin characterized Jemmy Button as a good and sympathetic boy and Fuegia Basket as good and modest if not a bit solemn.<sup>121</sup> Darwin positioned different types of Indigenous people in relation to their proximity to white Englishness. With the enslaved Fuegians who had ‘benefitted’ from an English education closest to whiteness and for that they are treated as benign presence. The natives that engaged in trade and exchanged their labor with colonizers are farther from whiteness but they display a ‘lesser degree of ferocity,’ implying that interacting with commerce exerted a civilizing force on them despite “their entire immorality.”<sup>122</sup>

Darwin’s description of his interactions with the native Fuegians exaggerated the danger of the interaction but does so in a way that is consistent with English stoicism.

“In the morning the Captain sent a party to communicate with the Fuegians. When we came within hail, one of the four natives who were present advanced to receive us, and began to shout most vehemently, wishing to direct where to land. When we were on shore the party looked rather alarmed, but continued talking and making gestures with great rapidity. It was without exception the most curious and interesting spectacle I ever beheld: I could not have believed how wide was the difference between savage and civilized man; it is greater than between wild and domesticated animal, inasmuch as in man there is a greater power of improvement.”<sup>123</sup>

The vehement shouting of the Fuegians and their alarmed disposition in this passage is presented in relief of Darwin’s stoic yet interested assessment of the natives who had directed his boat to a

---

<sup>121</sup> Darwin, *Voyage of the Beagle*, 196–197.

<sup>122</sup> *Ibid.*, 61.

<sup>123</sup> *Ibid.*, 194–195.

safe shore. Though their assistance alone seems to me sufficient evidence that the Indigenous people Darwin interacted with were merely surprised rather than malicious, perhaps looking to trade, Darwin plays off of contemporary fears of otherness to exaggerate danger, painting an otherwise benign episode as a daring narrow escape. Though he includes the important detail that the natives directed Darwin's landing he does so in a way that submerges this act of assistance as if it was just a whim of the natives rather than a conscious act of mutualism.

Darwin's interactions with Indigenous people in the global south was characterized as both dangerous and vital to the colonial project of 'human improvement.' A specifically British program of colonization was important to the plot of Charles Darwin's travel narrative, casting Darwin and his compatriots as benevolent agents of civilization. Fitzroy's stated reasons for the voyage were to return Fuegians who Captain Fitzroy had captured or purchased in his previous expedition and "... took with him to England, determining to educate them and instruct them in religion at his own expense. To settle these natives in their own country was our chief inducement to Captain Fitz Roy to undertake our present voyage..."<sup>124</sup> but when commissioning the *Beagle* British Admiralty was primarily interested in surveying trade routes with specific focus on charting coral reefs.<sup>125</sup> This fact is submerged in Darwin's commentary on Jemmy Button and Fuegia Basket in part because their repatriation bolstered implicit claims that the knowledge of colonizers could civilize Indigenous people and that knowledge transfers were unidirectional, with Indigenous people acting only as receptacles for the civilizing knowledge of colonizers rather than producers of knowledge in their own right. This episode served to

---

<sup>124</sup>Fitzroy conceived of this scheme of human improvement after capturing natives of the area in retaliation for a stolen boat. Browne. *Voyaging*. 147. Darwin, *Voyage of the Beagle*, 196.

<sup>125</sup> Alistair Sponcel, *Darwin's Evolving Identity: Adventure, Ambition and the Sin of Speculation* (Chicago: The University of Chicago press, 2018), 26–27.

exemplify and reify the epistemological superiority of white colonizers over Indigenous people. This is not incidental but constitutive of Darwin's scientific travel narrative.

Darwin's biographers, and Janet Browne in particular, have characterized Darwin's public facing publications as deliberate and measured in their conception and execution. Historians have dedicated a lot of time and energy to parsing out Darwin's motivation and processes as he developed his theory of evolution by natural selection and historians frequently point to his time on the *Beagle* as imperative to his theorization of speciation. Browne has paid particular attention to Darwin's caution as he developed and publicized his evolutionary theory. Characterizations of Darwin highlight his earnestness and humility but some biographers have, like Browne, drawn attention to omissions in Darwin's *Autobiography*, which obscured his "vast unacknowledged support system of Victorian gentry."<sup>126</sup> That is not to say that Darwin's success as a theorist was assured by his position in society. Alistair Sponsel follows Darwin's development as scientific practitioner "*as though* he would not inevitably succeed" in *Darwin's Evolving Identity*, Sponsel convincingly asserts that the nature of scientific success was dependent as much on developing and maintaining meaningful relationships with scientific peers and mentors as it was on the introductions assured by an affluent social position.<sup>127</sup> He points out that Darwin's success as a naturalist was not assured by his position in British society alone.

Darwin's time on the *Beagle* was vital to his production of the theory of natural selection but even before his theories had crystalized, he acknowledged the positive impact that scientific voyaging had on his own development. In the final paragraph of *The Voyage of the Beagle*, Darwin explicitly encouraged aspiring naturalists to participate in their own scientific voyages,

---

<sup>126</sup> Browne, *Voyaging*, xii.

<sup>127</sup> Sponsel, *Darwin's Evolving Identity*, 12. (Original emphasis).

despite the peril and loss of comfort during the voyage.

“But I have too deeply enjoyed the voyage, not to recommend any naturalist, although he must not expect to be so fortunate in his companions as I have been, to take all chances, and to start, on travels by land if possible, if otherwise, on a long voyage. He may feel assured, he will meet with no difficulties or dangers, excepting in rare cases, nearly so bad as he beforehand anticipates. In a moral point of view, the effect ought to be, to teach him good-humoured patience, freedom from selfishness, the habit of acting for himself, and of making the best of every occurrence. In short, he ought to partake of the characteristic qualities of most sailors. Travelling ought also to teach him distrust; but at the same time he will discover, how many truly kind-hearted people there are, with whom he never before had, or ever again will have any further communication, who yet are ready to offer him the most disinterested assistance.”<sup>128</sup>

In Darwin’s account, voyaging equipped him with a stoic resolve to endure dangers and look back on them as trivial and in doing so develop virtues such as “good-humoured patience, freedom from selfishness, the habit of acting for oneself, and of making the best of every occurrence.”<sup>129</sup> These are particularly coded masculine virtues in that they are the English earmarks of an adult member of public society (stoicism, paternalism, independence, and resourcefulness) though Darwin characterizes them as qualities of a specific nautical masculinity. Darwin does not say that voyages are the only way to develop these virtues but it is clear that Darwin’s unique experience on the *Beagle* served him well in his naturalist ambitions. English masculinity demanded that men seek adversity and peril in order to develop these qualities. Only once a person has suffered and survived perilous situations can they authoritatively make philosophical claims about the world.

The concept that suffering on a voyage builds character incentivized travel

---

<sup>128</sup> Darwin, *Voyage of the Beagle*, 487.

<sup>129</sup> *Ibid*, 487.

narrators to omit the contributions of peers in order to exaggerate the acuity or severity of the narrators' peril. This may seem on the surface simple self-aggrandizement and entitlement, which it is, but it was also a form of self-presentation that was available to those who hoped to make a name for themselves in Victorian scientific communities. In the final sentence of the book, he offers an ambiguous acknowledgement of 'the most disinterested assistance' he received from those 'whom he never before had, or ever again will have any further communication.' This could be the men on the ship whom Fitzroy advocated for when he chastised Darwin but this could also be natives whom, like the inhabitants of Tierra del Fuego who helped Darwin land his boat and were met with suspicion, assisted Darwin on his journey and were unacknowledged, unappreciated, and uncompensated. Though the episode I've described above is speculative, I'll show in the next chapter that prejudices against Indigenous knowledge were very real and the epistemological authority of white masculinity relied on pillaging, subordinating, and discrediting other people's knowledge.

## SECTION FOUR: Defining the Unreliable

Feminist historians of science have paid particular attention to how conceptions of gender have impacted the practice of science. In 1985 Evelyn Fox Keller declared science is ‘masculine’ in ethos and substance not just in the person of practitioner.<sup>130</sup> In the study of conceptions of gender in science, the feminist historian of science, Londa Schiebinger distinguishes three elements: how gender is defined, how sex is understood, and how actual men and women participated in science. These elements often refer to the manners of a particular class or particular people as characteristic of a particular sex.<sup>131</sup> In the 1980 *Death of Nature*, Carolyn Merchant showed how a new mechanistic worldview entailed the ‘death of nature.’ Nature as matter and motion weakened the moral restrictions embedded in older cosmologies that had previously restricted incursions into nature. Merchant focuses especially on the rhetorical violence of Francis Bacon’s new mechanical philosophy that was centered on subjugating nature to the will of men.<sup>132</sup> Reasoned impartiality became increasingly associated with masculinity in this model excluding actual women as well as ‘feminine’ cultural practices from the domain of truth.

The assumption that science has always excluded women is erroneous and erases the contributions of women who were engaged in knowledge production. Though universities were largely unavailable to women before the mid-twentieth century, the new science was fostered in not just universities but academies, princely courts, noble networks, and artisanal workshops.

---

<sup>130</sup> Evelyn Fox Keller, *Reflections on Gender and Science* (New Haven: Yale University Press, 1985), 1.

<sup>131</sup> Londa L. Schiebinger, *The Mind Has No Sex?: Women in the Origins of Modern Science* (Cambridge, Mass.: Harvard University Press, 1989), <https://openlibrary.org/books/OL2056557M>, 9.

<sup>132</sup> Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (New York: Harper & Row, 1989), <https://openlibrary.org/books/OL9245159M>, 126.

Before the stringent formalization of science in the nineteenth century, this sphere was expansive and included a number of women. That being said, some universities did involve exceptional women in knowledge production. The physicist Laura Bassi was the second woman in Europe to receive a university degree in 1732 and the first woman to be awarded a professorship. Paula Findlen asserts that Bassi served to bolster Bologna's weakening patriciate as a token of scientific and cultural regeneration.<sup>133</sup>

Gender became a potent principle organizing eighteenth century understandings of the natural world. Schiebinger points to the thoroughly artificial Linnaean naming system to show how conceptions of gender organized the natural world as well as the social world. Linnaeus's system for naming flowering plants prioritizes male reproductive part, classifying classes based on the number of male stamens and orders based on the female pistils within the same hermaphroditic plant. Further, the naming designation given to humans also reveals how organizing natural knowledge was thoroughly gendered. In creating the term Mammalia in response to human's place in nature, Linnaeus connected the female breast to the highest class of animal to which humans belonged. The choice of the term sapiens is highly significant as reason had traditionally distinguished human from animal and within the human species male from female. Within this naming system it is feminine qualities that tie humans to brutes while the masculine reason differentiated humans from brutes.<sup>134</sup>

In the eighteenth Century, Maria Sibylla Merian (1647–1717) was a renowned natural illustrator whose depictions of entomological and botanical specimens innovated scientific visual

---

<sup>133</sup> Schiebinger, "The Philosopher's Beard: Women and Gender in Science," in *Cambridge History of Science: Volume. 4: The Eighteenth Century*, 184–210, 185–187.

<sup>134</sup> *Ibid.*, 204–207.

culture and informed her contemporaries conception of entomological species. Her work was used by Carl Linnaeus, who formalized binomial nomenclature as the scientific naming convention that endures today, used her illustrations as exemplar of entomological species when developing his taxonomic system.<sup>135</sup> Early in Merian's life she took a special interest in entomological specimens, studying and illustrating the life cycle of silkworms. Her familial ties to publishing, art and industry well positioned Merian to be an influential artist but her sustained study and innovative scientific methodologies secured her reputation as a trustworthy naturalist.

Edgar Zilsel was among the first to point out the importance of artisan craft skills for the development of science, however Zilsel neglected to point out that the emerging value of these traditional skills allowed for the participation of women in knowledge production. Artisan workshops and guild traditions served as a way for women, mediated through male familial attachment, could interact with science.<sup>136</sup> In seventeenth-century Germany, 14% of all astronomers were women — a higher percentage than is true of today.<sup>137</sup> Londa Schiebinger describes how artisanal traditions and noble networks created a niche in which women produced meaningful contributions to contemporary understanding of nature but they also provided material support in developing a scientific understanding. These noble networks constituted sites to develop scientific expertise. For example, our own Maria Merian cut her teeth observing silkworms when she was just 13 years old.<sup>138</sup>

“From my youth onward I have been concerned with the study of insects. I began with silkworms in my native city, Frankfurt am Main; then I observed the far more beautiful

---

<sup>135</sup>Natalie Zemon Davis, *Women on the Margins: Three Seventeenth-Century Lives*, Acls Humanities E-Book (Cambridge, Mass: Harvard University Press, 1997), 214.

<sup>136</sup> Schiebinger, “The Philosopher’s Beard: Women and Gender in Science,” 186.

<sup>137</sup> Schiebinger, “The Philosopher’s Beard: Women and Gender in Science,” 184–210, 190.

<sup>138</sup>Davis, *Women on the Margins*, 144.

butterflies and moths that developed from other kinds of caterpillars. This led me to collect all the caterpillars I could find in order to study their metamorphoses... and to work at my painters art so that I could sketch them from life and represent them in lifelike colors.”<sup>139</sup>

Though the silk trade was distinct from the guild she was connected to, their shared business and locality allowed her to procure silk worms from local silk manufacturers, maintain, and observe them. This experience of maintaining and observing silkworms in captivity was formative to her development as a scientific thinker.<sup>140</sup>

During Merian’s voyage to Surinam in 1699, at the age of fifty-six, she produced *Metamorphosis Insectorum Surimesium* which contained images and descriptions that would inform and inspire colonial science for the next century. Yet by 1830, her reputation and the products of her colonial voyage were disavowed by young naturalists, building their own reputations around the masculine standards of science we have already discussed. Science done on voyages was vital to colonial rule and scientific understanding of life because such voyages were foundational for claims of moral superiority and epistemological privilege of colonizers. Colonizers naturalized their domination through authoritative narratives and empirical studies of the superiority of the metropole.

“I admire the Zeal of this female votary of the Sciences... (Maria Merian) ...her book, however, abounds with errors, against which the naturalist of Europe should be always upon his guard... (It is) sadly deficient in that minuteness of detail which is indispensable..... The grand defect of the work is the introduction of idle stories, related to her by strangers.... (that) go far to destroy that confidence which would naturally be given to a patient Observer of nature.”<sup>141</sup>

---

<sup>139</sup> Merian, *Metamorphosis Insectorum Surinemesium*, 141. Note 17 in Davis, *Women on the Margins*, 144.

<sup>140</sup> Davis, *Women on the Margins*, 143–4.

<sup>141</sup> Lansdown Guilding, “Observations on the Work of Marian Sibilla Merian on the Insects &c., of Surinam,” *Magazine of Natural History and Journal of Zoology* 7 (1834), <https://hdl.handle.net/2027/hvd.32044106375355>, 356.

In 1834, in a review of Maria Sibylla Merian's *Metamorphosis Insectorum Surimesium* that appeared in *The Magazine of Natural History*, Reverend Lansdown Guilding warned naturalists of the utter fallibility of the venerated lady entomologist. The page-by-page critique was full of facts and anecdotes from his own observations on the Caribbean Island of St. Vincent which he offered as a correction to what he saw as the deficiency in Merian's work on the northern coast of South America (over 1,000 kilometers away). The figures in *Metamorphosis Insectorum Surimesium* (1705) were described as "curious" "odd" "rudely done" and outright fictitious.<sup>142</sup> In Reverend Guilding's time as a colonial naturalist, on the island of St. Vincent, he had not seen anything like the phenomena described by Merian so he assumed that her perspective was compromised not so much by her misrepresentation of observed facts, but by her gullibility

This is gendered but also racialized. In a scientific world in which unbiased observation was the watchword of good practice, Merian had relied on the word of 'strangers.' But strangers to whom? From the 1830s and onwards, it was quite acceptable for established men of science to rely on the word of established or trustworthy authorities abroad, many of whom they had never met. Merian had relied, Guilding said, upon the testimony of those whose trustworthiness had not been publicly established in the scientific community of the time. Only insiders could be known. Indeed, it is important to note that the 'strangers' that Guilding refers to were the Indigenous and enslaved people who told Merian stories about phenomena they had witnessed and whose work informed Merian's own.

---

<sup>142</sup> Ibid, 359.

“The Indians, who are not treated well by their Dutch masters, use the seeds [of this plant] to abort their children so that their children will not become slaves like they are. The black slaves from Guinea and Angola have demanded to be well treated, threatening to refuse to have children. In fact, they sometimes take their own lives because they are treated so badly and because they believe they will be born again, free and living in their own land. They told me this themselves.”<sup>143</sup>

Colonial superstructures demand a specific way of looking at the world that separates the subject from the object of study, this binary denies the position of subject to certain people because they have been historically objectified as resources. It is a sort of absolutism that does not allow the objectified party to be treated as an actor in knowledge production. Merian’s admission that she considered enslaved knowledge to be knowledge reflects a nominal step away from colonial epistemological structures. In her time such a step was not damning while 130 years later, such a step was dangerous to Britain’s position as a global hegemon therefore her views needed to be systematically delegitimized by the scientific envoys of empire. Situated knowledges is an epistemological structure that demands that the object of knowledge be viewed as an agent in knowledge production, not as a resource or a background of said knowledge production. People with different epistemological structures and priorities must be acknowledged as both legitimate and trustworthy.

This demand for the omission of Indigenous and enslaved people’s knowledge is only tenable in an epistemological structure that denies that other forms of knowledge exist, even while that structure operationalized Indigenous and enslaved knowledge. This model maintained the British empire, which after the Napoleonic Wars (1815) expanded its colonial holdings and emerged as the major naval and imperial power. *Pax Britannica* was dependent upon colonial

---

<sup>143</sup> Londa L. Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*, Fulcrum.Org (Harvard University Press, c2004), 1. Translated from Maria Merian’s 1705 *Metamorphosis insectorum Surinamensium*.

science's claim to epistemological superiority over Indigenous and enslaved people's knowledge.

Globalizing influence of empire demanded that Indigenous knowledge be pillaged and yet simultaneously discredited by imperialist knowledge structures. This requires a very specific program of epistemological engagement of colonial men of science that demanded imperialists claim all useful Indigenous knowledge as their own. This program rewarded colonial collectors for omitting the labor of Indigenous and enslaved people in their heroic narratives of 'discovery' and punished naturalists from deviating from the imperial epistemological program. This is not a conspiracy but an acceptable way to build a life for individual men of science that culminates to an oppressive epistemological superstructure. Merian did not cite enslaved collectors by name but she does credit them while also drawing attention to the abysmal treatment of enslaved people in Dutch Surinam. A parallel can be drawn between the moralizing tone Charles Darwin took in his description of the violent annihilation of Indigenous people in Buenos Ayres by the government however his disgust still prioritized the perspective of colonizer, granting the colonized little agency. Merian's account of the mistreatment of enslaved people prioritizes their reactions to subjugation, highlighting the agency of the colonized to resist colonizers.

It is relevant to note that Merian's work was by no means technically perfect. There were mistakes in the presentation of egg and larval stages in which she mixed up organisms and placed the wrong egg with an adult, which are explained by failing health and a hasty return to the Netherlands.<sup>144</sup> Additionally, Merian's work became popular twenty years after she originally published *Metamorphosis* so it was reissued. The original 1705 edition was hand-

---

<sup>144</sup> Ibid, 1–3.

colored by either Merian or someone Merian had trained.<sup>145</sup> These copies are colored based on Merian's entomological research and are renowned for their fidelity to nature. However, the 1725 edition Guilding referred to, used the same copper plates but were colored by people who were not scientifically literate. The 1725 edition was colored for aesthetic purposes independent of Merian's research on the coloring of actual specimens. Much of Guilding's criticism arises from the discrepancy in coloring. These glaring discrepancies may have attracted Guilding's attention (and ire), however, his focus on her authority, or lack thereof, was a departure from the critiques of her work and further a departure from standards of academic decorum at the time.<sup>146</sup> Though Guilding asserts that it is the 'errors abound' in Merian's work that 'destroy that confidence which would naturally be given to a patient Observer of nature,' I posit that the entanglement of scientific authority and masculine authority in this period destroyed Guilding's confidence in Merian leading him to target her work unduly. Guilding's critique was informed by assumptions of scientific competency as inherently able, masculine, white, British, middle-class, heroic and therefore objective and even further that the rightful intellectual dominion of men was demeaned by the presence of someone who was not objective.

According to Guilding, the discrepancies between Merian's and his own work came from Merian's observational ineptitude not their disparate geographic and temporal locations. Their distinct spatial and temporal positionality was deemed irrelevant in the high-handed attacks on Merian's scientific reputation. Guilding was not the only naturalist who attacked Merian's work in this period. Merian's scientific authority was systematically dismantled in the 1830s and male

---

<sup>145</sup> i.e her daughters and assistants.

<sup>146</sup> For standards of gentlemanly decorum see Cohen, "Politeness" in *Fashioning Masculinity*. 42–53.

naturalists built their careers on the ruins of her reputation for meticulous observation.<sup>147</sup>

Victorian men of science told heroic stories about themselves and through this storytelling, they installed their own embodied perspective as objectivity; effectively barring non-normative bodies from the privilege to produce knowledge. These dynamic demands that non-normative bodies assimilate to hegemonic masculinity to gain nominal access to the epistemic authority that able, white, male actors enjoyed. Heroic acts of discovery constituted the bodily training that could garner epistemological authority but did not guarantee legitimacy. After all, Merian's *Metamorphosis Insectorum Surimesium* was the result of her own heroic journey that nearly killed her. Merian had to cut her voyage short after several bouts of malaria.<sup>148</sup> Bodily peril (and to a degree suffering) demonstrated the individual character but also commitment to the empirical endeavor of fact-finding. Further, it was only the peril of white male bodies that are deemed truly heroic, all other bodily peril was more like collateral damage than a character-building exercise. Scientific voyaging and publishing the experience was a common avenue to establish oneself in science in part because it allowed individuals to claim unique epistemic authority because of their colonial exploits.

Donna Haraway's "Situated Knowledges" (1988), presents an epistemological program that privileges partial perspective and critiques both a postmodernist affinity for absolute relativism and the totalizing force of objectivity while incorporating elements of both in her

---

<sup>147</sup> Etheridge, "Maria Sibylla Merian and the metamorphosis of natural history,". For example, MacLeay also attempted to disprove phenomena Merian observed by conducting laboratory experiments. Merian documented that a large spider could capture and devour a small bird. MacLeay tried to disprove this phenomenon by offering small birds to large spiders. When the spiders ran away from the bird, he pronounced the impossibility of any large spider devouring any small bird.

<sup>148</sup> Cecilia Mary Pick, "Rhetoric of the Author Presentation: The Case of Maria Sibylla Merian" (PhD diss., The University of Texas at Austin, 2004), 90.

<https://search.proquest.com/docview/305127035/abstract/673992B53F914EEDPQ/1>

epistemological program.<sup>149</sup> The epistemological regime of Victorian science installed the totalizing objectivity that Haraway critiques but she also addresses the other side of the epistemological spectrum. Men of science installed a narrow array gendered experiences as constitutive of empirical and inductive reasoning. These modes of knowledge production are not inherently masculine. Epistemological authority was enclosed by conflating conventional heroics with a reliability.

According to Haraway, feminist empiricism seeks to rehabilitate objectivity by operationalizing it for liberatory ends. Though Haraway seems to agree with the inversion thesis that subjugated people are better positioned to conceive of the oppressive superstructures that constitute the world but stops short of asserting that the perspective of oppressed people is innocent, value-free, and all-encompassing in their vision of the world. Instead, Haraway presents reborn objectivity that is attainable through epistemological conversations between people who are situated in epistemologically distinct positions. Objectivity cannot exist within a single perspective.<sup>150</sup> This demands that people believe that knowledge can exist in a form different from epistemological structures that form their perspectives. Standpoint theory asks that difference of perspective not be immediately relegated to epistemological oblivion of irrelevance, instead it encourages that the focus be placed on what multiple perspectives can agree, that is the objectivity that can be achieved and ought to be operationalized. Through political coalition building across epistemic positionalities, a clearer view of the world can be gleaned. This model is dependent upon both transparency and good faith across epistemological

---

<sup>149</sup> Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (1988): 575. <https://doi.org/10.2307/3178066>.

<sup>150</sup> Haraway, "Situated Knowledges," 590.

positionalities. In this way, situated knowledges is hostile to colonial superstructures that rely on the singularity of objectivity to endure. Through this lens we can see that there is a spark of subversiveness in Merian's half-hearted citation of Indigenous and enslaved people and their knowledge.

## **Conclusion**

In light of the formulations that feminist theorists have developed, it is clear that Victorian men of science conformed to contemporary norms of masculinity to assert that they possessed the masculine virtues necessary to claim epistemic authority. British men of science utilized colonial models of knowledge production to assert their authority over and in relief of the epistemic authority of women and Indigenous people. The travel narrative in particular functioned as a mode of exhibition in which individual men of science exaggerated danger and omitted acknowledgement of the help they received in order to present themselves in the vein of the heroic voyager. British men of science in particular sought to fashion themselves in the image of heroes that exhibited a particular masculinity that exalted independence and stoicism. In the Victorian period, emerging tenets of Liberalism promoted meritocracy but even as science became more open to the contributions of those who did not belong to aristocratic patronage networks, vestiges of those networks remained. In comparing Charles Darwin's public facing travel narrative and Thomas Huxley's private travel diary we can see how a man of means could afford to avoid the riskiest parts of doing science while asserting their total independence and stoicism. Specifically, perilous masculine experiences became a prerequisite for producing scientific knowledge and telling an exaggerated story of peril became a reliable means of accruing epistemic authority in the scientific community. It is not unreasonable to assume, then, that the production and distribution of the scientific voyage narrative, for both scientific and popular consumption, was a direct response to the concerns about the decline of British science that Babbage had pointed out in 1830.

## Bibliography

- Arnold, David. “‘Illusory Riches’: Representations of the Tropical World, 1840–1950.” *Singapore Journal of Tropical Geography* 21, no. 1 (March 2000).  
<https://doi.org/10.1111/1467-9493.00060>.
- Ashforth, Albert. *Thomas Henry Huxley*. Twayne’s English Authors Series, TEA S 84. New York: Twayne Publishers, 1969.
- Babbage, Charles. *Reflections on the Decline of Science in England, and on Some of Its Causes*. England: B. Fellowes, 1830. <https://hdl.handle.net/2027/uc1.b4512744>.
- Barnett, Lydia. “Terrestrial Labors: Working and Knowing the Earth in the Enlightenment” Lydia Barnett (Northwestern University) March 4, 3:30 Pm - 5:00 Pm via Zoom.”
- Barton, Ruth. “‘Men of Science’: Language, Identity and Professionalization in the Mid-Victorian Scientific Community.” *History of Science* 41, no. 1 (2003): 73–119.  
<https://doi.org/10.1177/007327530304100103>.
- Berger, Peter L., and Thomas Luckman. *The Social Construction of Reality: Treatise in the Sociology of Knowledge*. London: Anchor, 1967.
- British Association for the Advancement of Science. *Report of the First and Second Meetings of the British Association for the Advancement of Science at York in 1831 and at Oxford in 1832: Including its Proceedings, Recommendations, and Transactions*. London: John Murray, 1833. <https://catalog.hathitrust.org/Record/009033760>.
- Brooke, John Hedley. *Science and Religion: Some Historical Perspectives*. Cambridge History of Science. Cambridge; New York: Cambridge University Press, 1991.
- Browne, Janet. *Charles Darwin: Voyaging : Volume I of a Biography*. New York: Knopf : Distributed by Random House, 1995.
- Butler, Judith, and Elizabeth Weed, eds. *The Question of Gender: Joan W. Scott’s Critical Feminism*. 21st Century Studies; v. 4. Bloomington, Ind.: Indiana University Press, 2011.
- Butler, Judith. “Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory.” *Theatre Journal* (Washington, D.C.) 40, no. 4 (1988): 519–31.  
<https://doi.org/10.2307/3207893>.
- Carlyle, Thomas. *Critical and miscellaneous essays*. Boston: Phillips, Sampson, and Company, 1855.
- . *Heroes and Hero-Worship*. On Heroes, Hero-Worship, and the Heroic in History. London: Chapman and Hall, 1869. <https://catalog.hathitrust.org/Record/011600788>.

- . *Characteristics*. Hoboken, N.J.: Generic NL Freebook Publisher, 2000.  
<http://libraries.ou.edu/access.aspx?url=https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=2008436&site=ehost-live>.
- Cohen, Michèle. *Fashioning Masculinity: National Identity and Language in the Eighteenth Century*. London ; New York: Routledge, 1996.
- Collini, Stefan. *Public Moralists: Political Thought and Intellectual Life in Britain, 1850–1930*. Oxford : New York: Clarendon Press ; Oxford University Press, 1991.
- Darwin, Charles. *The Voyage of the Beagle*. An Everyman Paperback. United States -- New York: J.M Dent and Sons and EP Dutton & C. Inc, 1972.
- . *Journal of Researches into the Geology and Natural History of the Various Countries Visited by H.M.S. Beagle, Under the Command of Captain Fitzroy, R.N. From 1832 to 1836*. London: Henry Colburn, 1839.
- . *Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of H.M.S. Beagle Round the World, Under the Command of Capt. Fitz Roy*. London: John Murray, 1845.
- . *The Life and Letters of Charles Darwin: Including an Autobiographical Chapter*. New York (State): D. Appleton and Company, 1887. <https://hdl.handle.net/2027/hvd.32044107217689>.
- . *Autobiography and Selected Letters*. New York: Dover Publications, 1958.  
<https://catalog.hathitrust.org/Record/001489936>.
- Davis, Natalie Zemon. *Women on the Margins: Three Seventeenth-Century Lives*. Acls Humanities E-Book. Cambridge, Mass: Harvard University Press, 1997.
- Desmond, Adrian J. *Huxley: From Devil's Disciple to Evolution's High Priest*. Reading, Mass: Perseus Books, 1999.
- Dworkin, Andrea “Against the Male Flood: Censorship, Pornography, and Equality”, in *Oxford Readings in Feminism: Feminism and Pornography*, edited by Drucilla Cornell, 31–49. Oxford: Oxford University Press, 2000.
- Ellis, Heather. *Masculinity and Science in Britain, 1831–1918*. Genders and Sexualities in History. London: Palgrave Macmillan, 2017.
- Endersby, Jim. *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*. Chicago: University of Chicago Press, 2008.

- Etheridge, Kay. "Maria Sibylla Merian and the Metamorphosis of Natural History - ScienceDirect." *Endeavor* 35, no. 1 (2011): 16–22. <https://doi.org/10.1016/j.endeavour.2010.10.002>.
- Fagan, Melinda B. "Wallace, Darwin, and the Practice of Natural History." *Journal of the History of Biology* 40, no. 4 (December 3, 2007): 601–35. <https://doi.org/10.1007/s10739-007-9126-8>.
- Fulford, Tim. *Literature, Science and Exploration in the Romantic Era: Bodies of Knowledge*. Cambridge Studies in Romanticism 60. Cambridge, U.K. ; New York: Cambridge University Press, 2004.
- R. B. Freeman. *The Works of Charles Darwin: An Annotated Bibliographic Handlist*. 2nd ed. Dawson: Folkstone, 1977. <http://darwin-online.org.uk/content/search-results?pagesize=50&sort=date-ascending&searchtitle=Journal+of+Researches&datebefore=&publisher=&searchid=&allfields=&name=Darwin+Charles+Robert&place=&periodical=&published=true&dateafter=&pageno=1>.
- Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14, no. 3 (1988). <https://doi.org/10.2307/3178066>.
- Haslanger, Sally Anne. *Resisting Reality: Social Construction and Social Critique*. New York: Oxford University Press, 2012.
- Hay, Denys. *Europe; the Emergence of an Idea*. Edinburgh University Publications. 7 In. Edinburgh: University Press, 1957.
- Herbert, Sandra. "The Place of Man in the Development of Darwin's Theory of Transmutation. Part II." *Journal of the History of Biology* 10, no. 2 (1977): 155–227. <https://doi.org/10.1007/BF00572643>.
- . "A Universal Collector": Charles Darwin's Extraction of Meaning from His Galapagos Experience." In *Proceedings of the California Academy of Sciences*, 61:45–68. 4, 2010.
- Herschel, John. *Memoir and Correspondence of Caroline Herschel*. New York (State): D. Appleton and company, 1876. <https://hdl.handle.net/2027/miun.ajm8965.0001.001>.
- Hevly, Bruce. "The Heroic Science of Glacier Motion." *Osiris (Bruges)* 11 (1996): 66–86. <https://doi.org/10.1086/368755>.
- Higgitt, Rebekah, and Charles W. J. Withers. "Science and Sociability: Women as Audience at the British Association for the Advancement of Science, 1831–1901." *Isis* 99, no. 1 (March 2008): 1–27. <https://doi.org/10.1086/587538>.

- Hoff, Joan. "Gender as a Postmodern Category of Paralysis." *Women's Studies International Forum* 17, no. 4 (1994): 443–47. [https://doi.org/10.1016/S0277-5395\(05\)80051-2](https://doi.org/10.1016/S0277-5395(05)80051-2).
- Houghton, Walter E. *The Victorian Frame of Mind, 1830-1970*. New Haven: Yale University Press, 1971.
- Huxley, Leonard. *Life and Letters of Thomas Henry Huxley — Volume 1*. Project Gutenberg, 2004. <http://www.gutenberg.org/ebooks/5084>.
- Huxley, Thomas Henry. *Diary of the Voyage of H.M.S Rattlesnake*. Edited by Julian Huxley and Henrietta Huxley. Garden City, N.Y.: Doubleday, Doran & Co., 1936.
- Irvine, William. *Apes, Angels, and Victorians; the Story of Darwin, Huxley, and Evolution*. New York: McGraw-Hill, 1955.
- Keller, Evelyn Fox. *Reflections on Gender and Science*. New Haven: Yale University Press, 1985.
- Klein, Lawrence. "The Rise of 'Politeness' in England 1660-1715" PhD diss., Shaftesbury, 1984. ProQuest Dissertations and Theses.
- Langton, Rae. *Sexual Solipsism: Philosophical Essays on Pornography and Objectification*. Oxford: University Press, 2009. <https://doi.org/10.1093/acprof:oso/9780199247066.001.0001>.
- McCalman, Iain. *Darwin's Armada: Four Voyages and the Battle for the Theory of Evolution*. 1st American ed., New York: W.W. Norton & Co, 2009. <https://openlibrary.org/books/OL23217928M>.
- McClelland, Keith. "Some Thoughts on Masculinity and the 'Representative Artisan' in Britain, 1850–1880." *Gender & History* 1, no. 2 (1989): 164–77. <https://doi.org/10.1111/j.1468-0424.1989.tb00247.x>.
- McMillan, Carol. *Women, Reason, and Nature: Some Philosophical Problems with Feminism*. Princeton, N.J.: Princeton University Press, 1982.
- Merchant, Carolyn. *The Death of Nature: Women, Ecology, and the Scientific Revolution*. New York: Harper & Row, 1989. <https://openlibrary.org/books/OL9245159M>.
- Merian, Maria. *Metamorphosis insectorum surinamensium. Ofte verandering der Surinaamsche insecten. Waar in de Surinaamsche rupsen en wormen met alle des zelfs veranderingen na het leven afgebeeld en beschreeven worden, zynde elk geplaast op die gewassen, bloemen en vruchten, daar sy op gevonden zyn; waar in ook de generatie der kikvorschen, wonderbaare padden, hagedissen, slangen, spinnen en mieren werden vertoond en beschreeven, alles in America na het leven en levensgroote geschildert en*

- beschreeven*. 1st ed., Amsterdam: Gerarde Valck and Maria Merian, 1705.  
[https://catalog.lindahall.org/discovery/delivery/01LINDAHALL\\_INST:LHL/1284387930005961?lang=en&viewerServiceCode=AlmaViewer](https://catalog.lindahall.org/discovery/delivery/01LINDAHALL_INST:LHL/1284387930005961?lang=en&viewerServiceCode=AlmaViewer).
- Moore, James R. 1986. "Crisis Without Revolution: The Ideological Watershed in Victorian England." *Revue de Synthèse* 107 (1–2): 53–78. <https://doi.org/10.1007/BF03189011>.
- Morrell, Jack, and Arnold Thackray. *Gentlemen of Science: Early Years of the British Association for the Advancement of Science*. Oxford: Clarendon Press, 1981.
- . *Gentlemen of Science: Early Correspondence of the British Association for the Advancement of Science*. London: Offices of the Royal Historical Society, University College London, 1984. <https://openlibrary.org/books/OL2983614M>.
- Mosser, Kurt. "Kant and Feminism" *Kant-Studien* 90, no. 3 (1999): 322–353.  
<https://doi.org/10.1515/kant.1999.90.3.322>
- Nussbaum, Martha C. "Objectification." *Philosophy & Public Affairs* 24, no. 4 (1995): 249–91.  
<https://www.jstor.org/stable/2961930>.
- Owen, David. "Those Victorians." *The Canadian Historical Review* 39, no. 4 (December 1958): 327–30.
- Pick, Cecilia Mary. "Rhetoric of the Author Presentation: The Case of Maria Sibylla Merian." Ph.D., The University of Texas at Austin, 2004.  
<https://search.proquest.com/docview/305127035/abstract/673992B53F914EEDPQ/1>.
- Porter, Roy Author. *The Cambridge History of Science: Volume. 4: The Eighteenth Century*. Cambridge History of Science. Cambridge: University Press, 2003.
- Rehbock, Philip F. *The Philosophical Naturalists: Themes in Early Nineteenth-Century British Biology*. Madison: University of Wisconsin Press, 1983.
- Reidy, Michael S. "Mountaineering, Masculinity, and the Male Body in Mid-Victorian Britain." *Osiris (Bruges)* 30, no. 1 (2015): 158–81. <https://doi.org/10.1086/682975>.
- Richards, Evelleen. "Huxley and Woman's Place in Science: The 'Woman Question' and the Control of Victorian Anthropology." In *History, Humanity, and Evolution: Essays for John C. Greene*, edited by James Moore, 253–84. Cambridge: Cambridge University Press, 1989.
- Richards, Robert J. *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*. Science and Its Conceptual Foundations. Chicago: University of Chicago Press, 2002.

- Roper, Michael, and John Tosh. *Manful Assertions: Masculinities in Britain Since 1800*. London: Routledge, 1991.
- Rothblatt, Sheldon. *Tradition and Change in English Liberal Education: An Essay in History and Culture*. London: Faber and Faber, 1976.
- Ruse, Michael. "The Romantic Conception of Robert J. Richards." *Journal of the History of Biology* 37, no. 1 (2004): 3–23. <https://doi.org/10.1023/B:HIST.0000020389.71636.cc>.
- Schiebinger, Londa L. *The Mind Has No Sex?: Women in the Origins of Modern Science*. Cambridge, Mass.: Harvard University Press, 1989. <https://openlibrary.org/books/OL2056557M>
- Plants and Empire: Colonial Bioprospecting in the Atlantic World*. Fulcrum.Org. Harvard University Press, c2004.
- Scott, Joan Wallach. "Gender: A Useful Category of Historical Analysis." *The American Historical Review* 91, no. 5 (1986): 1053–75. <https://doi.org/10.1086/ahr/91.5.1053>.
- . *Gender and the Politics of History*. Rev. ed.. Gender and Culture. New York: Columbia University Press, 1999. <https://ezproxy.lib.ou.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&AN=48343>.
- Secord, James A. *Visions of Science: Books and Readers at the Dawn of the Victorian Age*. Oxford: University Press, 2014.
- Sponsel, Alistair. *Darwin's Evolving Identity: Adventure, Ambition and the Sin of Speculation*. Chicago: The University of Chicago press, 2018.
- Swade, Doron. "Babbage, Charles (1791–1871), mathematician and computer pioneer." *Oxford Dictionary of National Biography*. 23 Sep. 2004; Accessed 16 Jun. 2022. <https://www.oxforddnb.com/view/10.1093/ref:odnb/9780198614128.001.0001/odnb-9780198614128-e-962>.
- Tosh, John. "What Should Historians Do with Masculinity? Reflections on Nineteenth-Century Britain." *History Workshop*, no. 38 (1994): 179–202.
- Turner, Frank. 1978. "The Victorian Conflict between Science and Religion: A Professional Dimension." *Isis* 69 (3): 356–76. <https://www.jstor.org/stable/231040>.
- Whewell, William. "Mrs. Somerville on the Connexion of the Sciences." *Quarterly Review* 51, (1834): 54–68.

White, Paul. *Thomas Huxley: Making the "Man of Science."* Cambridge Science Biographies. Cambridge ; New York: Cambridge University Press, 2003.  
<https://openlibrary.org/books/OL18204507M>.

Winterburn, Emily. "Caroline Herschel: Agency and Self-Presentation." *Notes and Records* 69 (2015): 69–83. <https://doi.org/10.1098/rsnr.2014.0060>.

Wyhe, John van. "'My Appointment Received the Sanction of the Admiralty': Why Charles Darwin Really Was the Naturalist on HMS Beagle." *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 44, no. 3 (September 2013): 316–26. <https://doi.org/10.1016/j.shpsc.2013.03.022>.