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Essay Review

Escaping Darwin's Shadow *

JIM ENDERSBY
Darwin College
Cambridge University
Cambridge, CB3 9EU
U.K.

Picture yourself standing in the doorway of a vast, nineteenth-century museum, akin to one of the great Victorian natural history museums, a cathedral to the imperial sciences of collecting, classifying and describing. The ceiling of the cavernous main room is supported by a small forest of pillars and between these are hundreds of alcoves and side rooms, crowded with innumerable objects that trace the history of these sciences. Stuffed birds and animals, glassy eyed and moth-eaten. Preserved specimens, weirdly deformed by their thick glass jars. Endless sheets of pressed flowers, boxes of dried seeds and fruit, and table-sized sections through ancient trees. Mineral samples, rocks and fossils, gigantic dinosaurs sharing their stony beds with delicate, petrified ferns. Thousands of printed pages, from the cheap, steam-printed weeklies to the lush, hand-colored folios that celebrate great expeditions and exhibitions. And, of course, the portraits and marble busts of discoverers, explorers, namers, describers, cataloguers, and speculators – mostly grave, bearded, men. But it is hard to see the details of this astonishing collection, because the museum has only a single light, a dazzlingly bright, almost incandescent beacon that hangs in the very middle of the great hall. Your eyes are drawn to it immediately, but the intense, white light dazzles, and as you turn away to look at the collections, blinking hastily, the after-image of the central lantern floats before you, imprinting itself on everything you try to look at.

* Michael Shermer, In *Darwin's Shadow: The Life and Science of Alfred Russel Wallace* (Oxford: Oxford University Press, 2002); John G. Wilson, *The Forgotten Naturalist: In Search of Alfred Russel Wallace* (Arcadia, 2000); Jane R. Camerini, *The Alfred Russell Wallace Reader* (Baltimore: Johns Hopkins University Press, 2002); Peter Raby, *Alfred Russel Wallace: A Life* (Princeton: Princeton University Press, 2001); David Quammen, *The Song of the Dodo: Island Biogeography in an Age of Extinction* (New York: Simon and Schuster, 1996); Andrew Berry, *Infinite Tropics: An Alfred Russel Wallace Anthology* (London: Verso, 2002).

The big light is Charles Darwin, and the museum he illuminates so harshly is the history of the nineteenth-century sciences, and especially of natural history. There's no doubt that he deserves his central position in the great hall, but in recent decades so much energy has gone into Darwin studies that his influence has distorted our understanding of the entire period. The dazzling brightness of Darwin's light fades the delicate colors of many of the objects in the museum, depriving us of subtle nuances and details, while at the same time it leaves much in deep shadow, especially the back of the alcoves, each of which records a specialization within natural history. Lost in those shadows are a host of other, fascinating specimens – forgotten works by forgotten writers, neglected classifications, strange theories; unless they were produced by a "precursor to" or "opponent of" Darwin, they are seldom mentioned, their books are rarely read, their ideas rarely discussed. Also lost are the army of unpaid men and women – naval officers, colonists, missionaries, merchants, part-time naturalists, and others – who brought all these thousands of specimens to the museum; who were they, what were they doing, and why were they doing it? In all too many cases, no one knows (unless they happen to appear as a footnote in the *Darwin Correspondence*).

Darwin's overshadowing effect is not merely a problem for those of us who work on other nineteenth-century naturalists; it's potentially also one for Darwin scholars themselves. It seems unlikely that any future Darwin biographies are likely to add too much to the superb work of Adrian Desmond, James Moore, and Janet Browne. Further work on his context and especially on the reception of Darwinism are more likely sources of future insights, which means understanding the nature of the diverse communities who read and reacted to Darwin. While some of his major competitors, acolytes, and opponents have been the focus of excellent work, even that occasionally gets bogged down in their relations with Darwin(ism) rather than considering such careers in their own right. In any case, even the best biographical studies run the risk, by their very nature, of reducing the importance of the natural history community, or rather, communities, within which the better-known figures worked. This appears to be particularly true of scientific biographies, where the "lone genius who changed the world" myth seems to have survived all-too-successfully; by contrast, literary biography seems less vulnerable to this quaint approach, yet science is a much more collective endeavor than novel-writing. Victorian natural history could not have existed without obscure colonial collectors, provincial correspondents, specimen stuffers and sellers, journal editors, and hack writers. Among other things, these minor figures constituted a peer group, whose judgments made or broke reputations and ideas; they were a source of observations and information, without which few of the major natural history books could

have been written; they formed a friendly, social network within which to meet and talk; and, they provided a paying public for museums, books, and lectures. But most of all, they supplied specimens. None of the great nineteenth-century collections – from the British Museum's entomological and zoological treasures, to the massive herbarium at Kew – could have been assembled without the thousands of tons of plants, animals, and insects gathered by this all-but-forgotten throng of naturalists.

Alfred Russel Wallace began his career as a lowly member of that throng, collecting specimens for sale, an occupation that the metropolitan gentlemen of science looked down on, even though they depended on such efforts. Despite this humble beginning, by the time Wallace died in 1913, he was widely considered one of the nineteenth century's great naturalists. Yet since then, no one has suffered more severely from Darwin's overshadowing effect. Wallace seems condemned to be remembered merely as "the other man," the one who hit on natural selection independently of Darwin. Historians of the life sciences know he was a founder of zoological distribution studies, which became the science of biogeography, but to most people Wallace remains little more than a footnote to Darwin.

In some regards, Wallace's apparent eclipse is rather mysterious, not least because his life was much more interesting than Darwin's – while the latter sat at Down, nursing his stomach and grinding out facts, Wallace travelled among some of the world's most spectacular scenery and collected its most extraordinary creatures. He was passionately opinionated, committed at various times to everything from phrenology to spiritualism, from mesmerism to land nationalization; the politic, cautious, and meticulous Darwin seems dull by comparison and much less likely to disturb the universe.

The recent spate of books on Wallace seems set to overturn his comparative neglect, but in reality – for reasons I hope to make clear – several of those reviewed here are more likely to compound the problem. Two of them, Shermer's and Raby's studies, are biographies, whose merits will be discussed in more detail below. Wilson's book, on the other hand, is a rather curious hybrid of biography and contemporary travel writing as its author describes his search for information about Wallace, who was a distant relative. Sadly, Wilson is neither a historian nor a sufficiently compelling writer to make either strand of his book particularly successful, and it is unlikely to interest most readers of this journal. Quammen's publication is a more accomplished hybrid, which combines history and high-quality travel writing by setting Wallace's life and achievements among contemporary environmental concerns. There are one or two minor historical lapses – it is not, for example, entirely accurate to say that "the theory of special creation was still widely embraced" in 1857; leaving aside the important question of whether "special

creation" can even be described as a "theory" at this time, there's plenty of evidence that many full-time naturalists were increasingly dissatisfied with it. Nonetheless, Quammen's book, especially its opening section "The Man who Knew Islands," is an excellent introduction to Wallace for a non-academic reader. And there's a lot more to enjoy in the *Song of the Dodo*, which lies outside the scope of this review.

Unlike the other books reviewed here, Berry and Camerini have kept their biographical and background material brief and allowed Wallace's own words to speak for themselves. So little of Wallace's writing is in print that these two edited collections of his writings really deserve to be on the shelves of every university and college library, especially as there is relatively little overlap between them; Camerini's collection provides a good selection of his travel writings, primarily aimed at the general reader, while Berry's is more scholarly in ambition and comprehensive in scope. The *Alfred Russel Wallace Reader* can perhaps be faulted for compressing Wallace's intriguing and diverse views on political and social questions into a single brief chapter, whereas *Infinite Tropics* provides a superb selection of Wallace's opinions on matters such as land nationalization, spiritualism, imperialism and of his observations on the indigenous peoples he met on his travels, many of which seem surprisingly progressive by comparison with those of his contemporaries.

Although the anthologies of Wallace's writings are very welcome, I will focus on the biographies, since they make greater claims to interpret and understand his career. Reading all six books, one is – perhaps inevitably – struck by how repetitive the biographical information is, since they all draw fairly heavily on the same published sources, especially Wallace's autobiography *My Life* (1905). The early years of struggle, the trip to the Amazon, the disastrous fire that destroyed Wallace's collections, the journey to the Malay Peninsula, the birds of paradise, the "fevered" Ternate paper, the "bombshell" letter that forced Darwin into publication and the later breach with Darwin over the evolutionary status of humans – all these are fairly familiar to anyone with a general knowledge of Victorian science. What is largely lacking from these books (more forgivably in some cases than others) is a rich sense of how Wallace's career and preoccupations compare to any of his contemporaries other than Darwin. Without such contexts, some of the most striking features of his career, such as early enthusiasm for phrenology and mesmerism, or his fascination with the question of how new species arise, seem distinctive until one realises how widespread such concerns were among many people of his generation.[1] Even Wallace's much discussed passion for spiritualism and his conviction that it had a firm scientific basis was far from unique. Trying to

[1] Winter, 1998; Cooter, 1984; Cooter, 1989.

write a biographical study of Wallace that raises him to equal standing with Darwin, whatever its other pros and cons, is an attempt that seems doomed by the relative paucity of source materials, but even more by the way that conventional scientific biography tends to isolate the main character from their surroundings, instead of integrating the two.

Money, Manners and Class

A biographer must inevitably discuss who Wallace was and where he came from, questions that are not as easy to answer as they might appear. Quick summaries of Wallace's career tend to focus on contrasting his background, income, and education with Darwin's, and they regularly fall back on "working class" as a shorthand description of Wallace. Yet, as Raby rightly notes, his father "had lived the leisured life of a gentleman" before his marriage, and it was only as a result of various bad investment decisions that he lost his money.[2] Although young Alfred was thus forced to leave school at 14 and work for a living (in sharp contrast to Darwin), Wallace's manners and aspirations were closer to those of his middle-class father than they would have been to the real working-class. His observations on "The South Wales Farmer" (reprinted in Camerini's book)[3] described the people among whom he worked as a land surveyor. His wry, anthropological tone makes it very clear that he did not consider himself one of them, any more than they would have accepted him as one of their own. Berry opts for "genteel poverty" as a description of Wallace, while Camerini characterizes Wallace's family even more precisely as "rather poor" and "lower middle class."[4] Meanwhile, Wilson exaggerates when he describes the family as "destitute" – a term that might better be reserved for those incarcerated in workhouses or debtor's prisons.[5] Finding the precise term to describe Wallace's background is essential, because such apparently nit-picking distinctions are the very foundation of Britain's class-system, then as now. The ownership of a piano and a case of ferns, by someone who knew which fork to use and which novels to read, were much clearer indicators of middle-class standing than mere income. So when Michael Shermer describes Wallace's father's business failures as "thrusting the family into the working class," he demonstrates a poor understanding of the ways in which class is not merely economic, but embraces one's (sometimes self-defined) social identity.[6]

[2] Raby, 2001, p. 7.
[3] Camerini, 2002, pp. 34–60.
[4] Camerini, 2002, p. 3; Berry, 2002, p. 2.
[5] Wilson, 2000, p. 9.
[6] Shermer, 2002, p. 34.

A simplistic contrast between the "middle-class" Darwin and the "working-class" Wallace cannot hope to illuminate the subtle reasons why Wallace was never entirely accepted among the clubbable gentlemen of science. After all, Thomas Henry Huxley came from an even more humble background, but made his mark on London science (and on history) with much greater effect than Wallace. To understand why, it's necessary to pull-back from Wallace and look instead at the wider Victorian scientific world.

Comparing Wallace's career with some of his contemporaries might allow useful distinctions to be drawn. For example, the zoologist William Swainson (whose work Wallace read as a young man in Wales) came from a comfortably-off family – not unlike Wallace's – who had been minor landowners, but had, as Swainson puts it in his autobiography, "through the improvidence or misfortunes" of his ancestors, lost most of their money.[7] As a result, he too left school at 14 without completing his education and eventually joined the army and travelled. While in the army, he developed a passion for natural history, but was unable to find paid work in any of its branches. When he tried to get a job at the British Museum, he recorded that "I was refused, and a gentleman (J.G. Children, Esq.), who knew nothing of natural history, was appointed."[8] Swainson suspected that it was Children's social status (he had "Esq." but – unlike Swainson – no "F.R.S." after his name) which earned him the job. Genteel manners rather than scientific accomplishment were often the key to making one's way in London's scientific society. In 1851, Joseph Hooker discussed the possibility of a job at the British Museum with his friend, George Bentham, "It is £400 & an excellent house. Work hours from 10–4." Hooker sarcastically acknowledged that, "I know nothing of Chrystallography [*sic*], Mineralogy Chemistry &c. but the Trustees are above such prejudices against a man who could wear a white neckcloth with ease & take his fair share of their abuses with equanimity, which would be an all powerful testimonial."[9] In Victorian Britain, manners made the naturalist, or at least helped him get a paid position. So, despite Wallace's comparative poverty, his middle-class family would have given him some sort of start, although perhaps not enough of one – Lady Lyell apparently found him gauche on first meeting.[10] Raby gives other interesting evidence of Wallace's slightly uncertain status in scientific London, noting

[7] See McMillan, 1980, for more on Swainson.

[8] Adrian Desmond argues that the BM's appointment of Children, an Old Etonian, was "testimony to the value of manners over accomplishment" (Desmond, 1989, p. 147).

[9] By "white neckcloth" Hooker meant a formal cravat or scarf worn with evening dress. J.D. Hooker to Bentham, 3/9/1851: LFH2, Archives, Royal Botanic Gardens, Kew, Richmond. See also Huxley, 1918, p. 351.

[10] Raby, 2001, p. 167.

for example that Sir Charles Lyell managed to confuse Bates and Wallace – despite their complete lack of physical similarity; Raby rightly suggests that he probably saw the two paid collectors as "belonging to a different variety, if not species, of scientist."[11] Such observations provide a valuable starting point for a more detailed study.

Wallace's advocacy of spiritualism and socialism are often cited as reasons for his partial eclipse and a similar conclusion could be drawn about Swainson, whose continuing advocacy of the quinarian system of classification was considered eccentric by his fellow naturalists, many of whom had shared his fascination in the early 1840s but had since moved on. However, one should be wary about assuming that a naturalist's ideas were ultimately determinants of his status. Edward Forbes advocated a theory he called "polarity," inspired by a combination of rabid anti-transmutationism and German Idealism, which most of his contemporaries found incomprehensible.[12] Like Wallace and Swainson, Forbes was forced to work for a living, his father having also lost most of his money. Yet his affable manner and gift for composing comic songs made him a welcome figure at social gatherings.[13] By contrast, the botanist Hewett Cottrell Watson – despite being an impeccably empiricist fact-gatherer whose data were used by Darwin, Hooker and others – managed to alienate many of his contemporaries through his intemperate writing style, a fault compounded by his avoidance of London's social and scientific clubs. Lonely, irascible, and touchy about his recognition, Watson was much more of an outsider than Wallace, despite having a small inheritance that freed him from the need to work for a living.[14]

Nevertheless, there is no doubt that Wallace's fascination with spiritualism, from the mid-1860s onward, was a source of considerable discomfort to his scientific friends. In 1879, when Darwin wrote to Hooker to enquire about the possibility of getting Wallace a government pension, Hooker initially dismissed his claims: "Wallace has lost cast [*sic*] terribly, not only by his adhesion to Spiritualism, but by the fact of his having deliberately & against the whole voice of the Committee of his section of the British Association, brought about a discussion on Spiritualism at one of it's [*sic*] sectional meetings, when he was President of that section. – This he is said to have done

[11] Raby, 2001, p. 167.

[12] However, Raby, 2001, p. 102 claims that Forbes's announcement of polarity in 1854 partly inspired Wallace's species work.

[13] For more on Forbes, see Browne, 1981; Browne, 1983, pp. 114–117; Rehbock, 1983, pp. 68–112; Mills, 1984; Gay and Gay, 1997.

[14] For Watson, see Egerton, 1980; Browne, 1983, pp. 64–109; Rehbock, 1983, pp. 176–187; Allen, 1986.

in an underhand manner, & I well remember the indignation it gave rise to in the B. A. Council, & amongst the members at large."[15]

A careful reading of this letter, which also discusses Wallace's ill-advised £500 bet with John Hampden over whether the earth could be scientifically proved to be flat, shows that Hooker's doubts about Wallace's chances of obtaining the pension were primarily motivated by the suspicion that Wallace was not a gentleman. He had lost caste because of the perception that he had acted underhandedly and the matter of the bet seemed to exhibit too great a concern for making money rather than with the pursuit of truth. (Nor were Hooker's suspicions entirely unfounded – Wallace was still badly in need of money at this period, as is evidenced by the number of reviews he undertook; had his financial position been as secure as Hooker's, Wallace might never have taken Hampden's bet.) Yet a year later, Wallace's genteel standing was magically restored in Hooker's eyes when the former dedicated *Island Life* (1880) to Hooker; a delighted Hooker immediately joined Darwin's successful campaign to secure Wallace's pension.[16] While advocacy of spiritualism undoubtedly did Wallace no good, ideas alone rarely seem to have cost anyone their socio-scientific standing (although Wallace's penchant for unguardedly broadcasting his commitment to each fresh enthusiasm certainly didn't help him).

When Wallace admitted that he "could *never have approached* the completeness of [Darwin's] book, its vast accumulation of evidence, its overwhelming argument," he was perhaps assuming that Darwin's was the superior intellect, but there's no doubt that superior wealth and leisure also made writing the *Origin* much easier.[17] However, when one once begins to place Wallace in a wider context, it becomes apparent that there were a great many complex reasons for the differences between his status and Darwin's.

Theory and Practice

In sharp contrast to Raby's generally excellent account, which might be improved by a little more analysis, Shermer's book suffers from being overburdened with theoretical baggage. Its subtitle "A Biographical Study on the Psychology of History" suggests that Wallace is merely a specimen being dissected to illustrate an elaborate theory, which seems to be precisely what its author attempts. The preface and "prologue" of *In Darwin's Shadow* are

[15] J.D. Hooker to C. Darwin, 18/12/1879: Cambridge University Library, DAR 104. Parts of this letter are also quoted in Raby, 2001, p. 222.

[16] Raby, 2001, p. 224.

[17] A.R. Wallace to H.W. Bates, 24/12/1860: quoted in Raby, 2001, p. 153.

entirely taken up with an explanation of Shermer's methodology of "quantitative biography" and his "historical matrix model," which supposedly shows how Wallace's "theory on evolution man and mind" arose from the interaction of "external forces (culture)" and "internal forces (thoughts)." The former range from "Pseudoscience/spirituality/phrenology" via "teleological purposefulness" down to "working-class associations," while the "thoughts" begin with "hyper-selectionism" as the most powerful "factor," down through such things as "egalitarianism" to Wallace's supposedly "heretic personality."[18]

Shermer, who is founding publisher of the U.S. atheist's tract, *The Skeptic* (http://www.skeptic.com/), is determined to give his book a proper scientific foundation and claims that it: "is both biography and investigation, narrative and analysis, history and theory. It is a study in psychology and biography, as well as the psychology *of* biography. It asks of the past, what happened and why? It is a look at both *a* biography and at biography itself. The data from the life of Alfred Russel Wallace do not speak for themselves, but instead are interpreted through theoretical models and are presented for or against specific views, so that the facts of this biography are bounded and of service."[19]

In pursuing these intentions, Shermer loads his introduction with tables and charts, statistical analyses of the subjects of Wallace's published papers, and interminable lists not only of species, specimens, specializations and publications, but also of modern buildings and institutions that are named after Wallace.[20]

Shermer seems convinced that an objective biography, "bounded and of service," is what every historian of science has been waiting for, a chance to break with the tendentious subjectivity that has always marred the humanities and to drag our subject kicking and screaming into the cold, hard light of science. Curiously, given that no one has previously achieved it, he doesn't seem to have found it too hard to do. Consider, for example, how he establishes the fact that Wallace possessed a "heretic personality." The term is taken from Frank Sulloway's *Born to Rebel* (1996), which analyzes the influence of birth order and "family dynamics" on creativity and personality type: heretic personalities are supposed to be rebellious, extroverted and creative, unhappy with received wisdom and ready – sometimes all-too-ready – to embrace new ideas. Shermer's first step in proving that Wallace fits this description is to conduct a scientific study: "To measure Wallace's personality Frank Sulloway and I had ten historians of science and Wallace

[18] Shermer, 2002, p. 8.
[19] Shermer, 2002, p. 4.
[20] E.g., Shermer, 2002, pp. 14–15.

experts rate him on a standardized Big Five personality inventory of forty descriptive adjectives using a nine-step scale. For example: I see Alfred Russel Wallace as someone who was . . . Ambitious/hardworking 123456789 Lackadaisical."[21] Some of you might fear that the terms "hardworking" and "lackadaisical" lack any degree of precision (to say nothing of "tough-/tender-minded" or "rebellious/conforming") – how can we be sure that our ten historians agree on their definitions, given that, generally speaking, it's hard to get agreement between even two historians? Others might be worried that the main basis on which Wallace's personality is being assessed is the published accounts of other historians, most of whom draw heavily on *My Life*. But to Shermer it is apparently obvious that ten historians – "and Wallace experts" – can successfully psychoanalyze a dead man they've never met, thus saving us all years of archival work, research, interpretation, argument and the need for rich social and cultural contextualization.

Given that Shermer's research is not all bad, one might be tempted to skip his introduction and just read the story, but unfortunately Shermer feels compelled to serve up each factual morsel on a bed of psychological theorising. This is doubly irritating because, despite his scientistic rhetoric, Shermer offers no evidence for many of his comments. For example, noting that Wallace, like most British schoolboys of his day, was caned, Shermer speculates that while it may have been character forming, it was "more likely such punishment, often doled out for nothing more than intellectual shortcomings, instilled in Alfred a sense of inequity that needed redressing."[22] Or perhaps not; no evidence is offered one way or the other.

Shermer's own background is in the history of ideas, hence his simplistic deployment of "factors" and "forces" that shaped Wallace's thinking into "internal" and "external" ones – "culture" and "thoughts," as Shermer puts it. The mystery is how he imagines these "thoughts" acting and spreading; the explicit contrast between them and the "external/cultural forces" implies that thoughts simply spring fully-formed into someone's mind, but suppose they occasionally travel around in books and conversations, or arise from the material practices of a science? Aren't they then "culture" and thus "external?" In the last thirty or so years, historians of science have largely abandoned the assumption that some "factors" (truth, logic, data, etc) are properly internal to science while others (politics, religion, careerism, and so forth) are merely external. Such distinctions have come to be regarded as at best unhelpful and at worse pernicious and reading a book like Shermer's is a good illustration of why. Only a decoupling of the "ideas" of naturalists from

[21] Shermer, 2002, p. 25.
[22] Shermer, 2002, p. 39.

the material practices and culture of collecting could allow him to perpetrate such vague generalizations as: "Whereas the fifteenth through the eighteenth centuries were the age of geographical exploration in the expansion of the world, the nineteenth century was the age of geological, zoological, and botanical exploration in the expansion of scientific knowledge."[23] This is the kind of thing for which undergraduates get their knuckles metaphorically rapped; what, for example, does Shermer imagine Linnaeus and his students, or Joseph Banks, or Hans Sloane, were up to?

Ironically, Shermer complains that the history Wallace learned at school "provided no historical or cultural context," a fault that is conspicuous in his own book.[24] For example, in his account of Wallace's reading of and reaction to the publication of the *Vestiges of the Natural History of Creation*, in 1844, Shermer mistakenly asserts that *Vestiges* was based on Lamarck's theories of transmutation (Raby, unfortunately, makes the same mistake), but its anonymous author actually went to elaborate lengths in the first edition to distinguish his theories from Lamarck's, in an attempt to avoid being associated with atheistic French radical ideas.[25] It is a pity that Shermer neither cites nor appears to have read James Secord's recent study of the *Vestiges*, which would have given them a better understanding of why the book created the extraordinary sensation it did – Wallace was very far from being the only one who fell under its spell.[26] Situating Wallace's responses to *Vestiges* in the wider context of the book's sensation might have helped Shermer to avoid saying that "Wallace began with theory, then turned to data. He converted to evolution, then went out into the world to become a naturalist."[27] Just because Shermer begins with a simplistic distinction between "facts" and "theory" doesn't mean that Wallace did, and "converting" to evolution was no straightforward matter in the 1840s, not least because the term was not used ("transmutation" or "development" were the common ones), but also because there were many competing views as to whether or if it took place and no consensus, even among those who supported the idea, as to how it happened.

Shermer is a little too casual in the way he uses important terms. Despite noting that the term "scientist" was not in use in the early nineteenth century, he describes the readers of the Society for the Diffusion of Useful Knowl-

[23] Shermer, 2002, p. 56.
[24] Shermer, 2002, p. 39.
[25] Shermer, 2002, p. 53; Raby, 2001, p. 27.
[26] Secord, 2000. The book appeared rather too early for Raby to have had time to read it before publication.
[27] Shermer, 2002, p. 55.

edge's (SDUK) publications during the early 1840s as "working scientists" and claims that John Herschel's *Preliminary Discourse on the Study of Natural Philosophy* (1830) "was written for the amateur scientist."[28] Raby occasionally does the same, mis-describing the socialist Robert Owen as an "agnostic" in 1837, despite the fact that the term would not be coined until 1869, eleven years after Owen's death.[29] Such objections may seem like mere pedantry, but I suspect that these mistakes indicate a serious ignorance of the wider setting of British natural and social history. The term "agnostic," for instance, could not have been coined in the 1830s because its coining was part of what might be called the post-1860 settlement, in which a partial separation of church and science was gradually negotiated by liberal clergy and professionalizing men of science. In the first camp were people such as the authors of the 1860 *Essays and Reviews*, who were taking up the challenge to the traditional authority of scripture that had been raised by analyzing the Bible using historical and literary-critical techniques – as if it were any other book. While in the other were those, like Huxley, Hooker, and John Tyndall, who wanted to earn a respectable living from their science by instituting such things as recognized, independent scientific education and accreditation. (The *Origin of Species* was, of course, part of this settlement, not the reason why it was necessary.) In the 1830s, almost no one perceived the need for such a settlement, and thus saw no need for the term agnostic, which helped to create a new social role – that of the "honest doubter."[30] The fact that the term was not coined earlier is not a linguistic accident, but a useful indicator of how different the world of Wallace's youth was from that of his maturity, a point anyone studying him ought to take into account.

For similar reasons, almost no one in Britain saw the need for William Whewell's term "scientist" when he coined it in the early 1830s. It was still regarded as an ungainly neologism in the 1840s and 50s and did not come into regular use until after the 1860s.[31] One reason for its slow adoption is that there was scarcely a "profession" of science that people could join and thus no group to take up and use the label. As Edward Bulwer-Lytton observed in 1836, "in England the cultivation of science is not a profession."[32] Raby's claim that "most professional scientists ignored [*Vestiges'*] huge sales and interest," suggests an insensitivity to the lack of scientific

[28] Shermer, 2002, pp. 50, 52.

[29] Raby, 2001, p. 14. The botanist Richard Spruce is also described as an agnostic in the 1840s, Raby, 2001, p. 51.

[30] Lightman, 1987; Turner, 1993, ch. 7. I am indebted to Thomas Dixon for his guidance on this point.

[31] Turner, 1993, pp. 177–178; Morrell, 1996, pp. 982–984.

[32] Lytton, 1836, II, p. 190.

career opportunities at the time.[33] Similarly, to describe Wallace as someone who used the "profession of collecting" to transform himself from "a raw amateur" into a "professional collector," as Raby does, is to miss the subtle, but potential disastrous implications that being paid could have on one's social standing.[34] Although he quotes Leonard Jenyns on the involvement of "several persons among the lower classes" earning a living from insect-collecting, the implications of this association between paid and lower-class work could have usefully been explored in more detail.[35]

In the early decades of Wallace's career, being paid to practise science was not the mark of a "professional" in the modern sense; instead it threw considerable doubt on whether one was a respectable gentleman and thus entitled to attend the meetings of the country's elite scientific societies and publish in their journals. The older ideal of the independently wealthy man of science, disinterestedly pursuing knowledge for its own sake, rather than for profit, was still very much alive in Britain during the first half of the nineteenth century. As late as the 1850s, as Raby notes, the admission of mere "collectors" into the Entomological Society was still controversial, and he also discusses the way that Wallace's status as a collector made it hard for him to be accepted in the Society as theorist. But while these incidents are fascinating, one gains little sense of the way such barriers operated within the natural history world.[36] Raby's excellent research could have been made even more useful if Wallace's life-long battles to establish a career had been compared with those of, say, Hooker and Huxley and with less well-known figures like Spruce and Bates.

Understanding just how social and scientific rank were intertwined in Victorian Britain also illuminates aspects of the much-debated question of whether or not Darwin gave Wallace due credit as co-discoverer of natural selection. It's an issue most of these books discuss, without shedding much light, since the main issues – from postal delivery schedules to Wallace's unfailing deference to Darwin – have already been extensively discussed by several authors.[37] What is perhaps more interesting is to see how Wallace's relatively low standing as a commercial collector blinded Darwin to the possibility that Wallace might be about to formulate his own theory of the origin of species. In a letter that gently warned off Wallace from species work, Darwin commented "I wish I might profit by the publication of your Travels there

[33] Raby, 2001, p. 27.

[34] Raby, 2001, p. 26.

[35] Raby, 2001, p. 51.

[36] Raby, 2001, pp. 85, 111. Camerini, 2002, p. 8 mentions the same point.

[37] Berry gives a useful overview of the literature in his "Coda," Berry, 2002, pp. 379–383. Quammen, 1996, pp. 105–114 also discusses the issue and, like Berry, tends to conclude that Wallace was unfairly cheated of his rightful share of the credit.

before my work appears, for no doubt you will reap a large harvest of facts."[38] This makes it clear that he thought Wallace was a mere collector and thus not qualified to speculate. As Darwin told Bates in 1862, "ordinary Entomologists . . . cannot be considered scientific men but must be ranked with collectors of postage stamps & crockery."[39] The nature of Wallace's stature in the world of nineteenth-century natural history, and the extent to which it was – or wasn't – typical of other collectors, are potentially more fruitful areas for research than further attempts at untangling Darwin and Wallace's respective claims to priority.

The Cultures of Victorian Natural History

Much more work is needed before we can gain a full sense of Victorian natural history and its diverse communities of practice, which I would argue is essential to understanding the careers of both Wallace and many of his contemporaries who also languish in Darwin's shadow. Nevertheless, some sense of how such studies might illuminate Wallace's career can be gained by considering his enduring interest in the geographical distribution of animals. His primary motivation for studying distribution was to understand the origins of species, as is apparent from an early letter that he wrote to Bates, prior to their joint expedition to the Amazon: "I begin to feel dissatisfied with a mere local collection – little is to be learnt by it. I shd. like to take some one family, to study thoroughly – principally with a view to the origin of species."[40] As he travelled with this aim in mind, his observations convinced him that similar species – both living and fossil – were invariably found in close physical and temporal proximity and he took this as key evidence of common descent.[41]

However, Wallace was not the only Victorian naturalist who was absorbed by distribution; it was a widespread enthusiasm, and it should not be assumed that his main reason for studying it – answering the species question – was shared by everyone who worked on the topic.[42] Distribution may be one of the areas where the Darwin-centrism of nineteenth-century natural history studies proves misleading; although Darwin and Wallace's motivations for

[38] C. Darwin to A.R. Wallace, 1/5/1857: Burkhardt and Smith, 1990, quoted in Raby, 2001, p. 126.

[39] C. Darwin to H.W. Bates, 24/11/1862: Burkhardt et al., 1997, quoted in Raby, 2001, p. 307, n.2.

[40] A.R. Wallace to H.W. Bates, quoted in Raby, 2001, p. 28 and in Shermer, 2002, p. 57. See also, Camerini, 2002, p. 102.

[41] Camerini, 2002, p. 64.

[42] See Browne, 1983, for more on the rationale of distribution studies.

tackling distribution were similar, not all Victorian naturalists were obsessed with the question of species.

If one turns from zoological to botanical distribution studies, a much wider range of motivations is revealed. The global survey of vegetation conducted by the Royal Botanic Gardens at Kew, and its associated colonial gardens, was driven by a desire to assess the vegetable resources of the empire, at a time when its wealth depended on plants. From tea, cotton, indigo, and jute, to gutta percha, timber, spices, dyes, and medicines – all were derived directly from plants. Understanding what grew where and why was the key to successfully transplanting economically valuable crops to British colonies with cheap labor.[43] For men like Joseph Hooker, Bentham, and John Lindley – the question of how, and even whether, plants evolved was much less important than the climactic, geological, and other factors that determined where they grew. And for those like Hooker, who earned their living from classification, surveying geographical variation was also the key to clarifying the nomenclature of species; by using Kew's vast herbarium to survey the world at a glance, he could over-rule the provincial and colonial "species mongers," whose passion for giving new scientific names to what he considered merely local varieties drove him to distraction.[44]

These largely pragmatic bases for plant distribution studies, especially their imperial motivation, led to governmental resources being put into such efforts – one important reason why, as Darwin told Wallace, "the whole subject of distribution of animals is dreadfully behind that of Plants."[45] Although some botanists whined that they were under-resourced and their work was considered unphilosophical, the zoologists must often have envied the resources their botanical colleagues could draw on: the network of colonial gardens and officials, together with both self-motivated and paid collectors, all sending specimens to Kew, in part because of a desire to help discover new crops and so enrich the empire. The need to synthesise and make sense of this mass of information also created a further difference between botanical and zoological studies – the latter generally lacked numerical data. Botanists used a technique known as botanical arithmetic (frequently attributed to Alexander von Humboldt, but actually the creation of Robert Brown) which used the ratios between different taxonomic groups to give a degree of precision to their observations. As Darwin told Hooker, there is "no little ambiguity in the mere assertion of 'wide ranges,' (for zoologist [*sic*] seldom

[43] See Drayton, 2000, for the best recent account of Kew and its imperial role.

[44] Endersby, 2001.

[45] C. Darwin to A.R. Wallace, 22/12/1857: Burkhardt and Smith, 1990. Also quoted in Raby, 2001, p. 133. Of course, similar motivations would eventually lead to money being invested in such matters as economic entomology, but in the mid-nineteenth century, botany seems to have taken precedence.

go into strict & disagreeable arithmetic, like you Botanists so wisely do)."[46] This methodological sophistication grew in part from the nature of botanical practices and materials, not least of which was the cheapness and ease with which plants – both living and dried specimens – could be preserved and shipped compared with animals.

Yet within this picture of botanical dominance, Wallace may have been something of an exception. In 1844, he had met Henry Walter Bates who inspired a particular interest in insects that Wallace never abandoned.[47] Insects are as almost as portable and easy to ship as plants, which makes it easier to amass and survey huge collections. As Hooker would later comment to Bates, "I began science myself with Entomology," and was "much struck in my small experience with the ample facility there was for working out questions of variation, owing to the readiness with which you can compare many specimens at one *coup d'oeil* & sort them in various diverging series."[48] The manageable size of insect collections was perhaps more important to Wallace than to other naturalists, not least because his own collections and personal experience were broad enough to give him a better sense of global distribution than most of his contemporaries could have hoped to gain in a lifetime of museum visiting and letter writing. Even more importantly, Wallace was not just widely travelled; unlike Darwin, Hooker, or Huxley – all of whom had also been shipboard naturalists – Wallace was a *commercial* collector and so needed to collect many more examples of each species than those who only collected for themselves or their Navy paymasters. Quammen makes the tantalizing suggestion that the sheer numbers of specimens may have helped Wallace to appreciate the importance of variation, since no two would have been identical, but he doesn't develop this intriguing idea, nor do any of the other authors look at this issue.[49] Future Wallace scholars might well find it productive to follow up this potential link between the need for multiple specimens, the ease with which they could be gathered, their geographical locations, and perhaps their economic importance. My hunch is that these material factors were central in shaping Wallace's increasing sensitivity to the precise relationship between a species and its habitat, which would eventually make him one of the most important pioneers of biogeography.

[46] C. Darwin to J.D. Hooker, 31/3/[1844]: Burkhardt and Smith, 1987, p. 24.

[47] Raby, 2001, p. 22.

[48] J.D. Hooker to H.W. Bates, 26/3/1861: *J.D. Hooker Papers*, American Philosophical Society, B/H76.

[49] Quammen, 1996, p. 67.

Conclusion

For anyone who hasn't read a Wallace biography before, Raby's is undoubtedly the best – clear, well-written, and fully-documented, but his decision to avoid going into the historical background too deeply may explain why it adds comparatively little to existing accounts. Perhaps some will find Shermer's biographical method and theory fascinating, but I'm afraid I found it as unbearable as his penchant for unsubstantiated speculation, sweeping generalization, and occasional cliché.

Like most of the authors reviewed here, Shermer complains that Wallace has been neglected, yet ironically he – like other Wallace biographers – are actively contributing to their hero's marginalization. Amabel Williams-Ellis's 1966 biography of Wallace labelled him simply as *Darwin's Moon* and in Shermer's estimation, this humble satellite now seems to have been eclipsed further by *Darwin's Shadow.* Wilson's choice of the *Forgotten Naturalist* seems similarly designed to reinforce rather than reverse Wallace's obscurity, not least because neglect alone does not guarantee that renewed interest is warranted; some people – like some books – are deservedly forgotten.

Berry and Camerini's collections are important and very welcome additions to Wallace scholarship and form an invaluable new resource. Building on them, future scholarship should allow us to get a better sense of who Wallace was and what he was doing, by recognizing that he was not "orbiting" Darwin, but was pursuing an independent career under very different circumstances. It is historians – particularly Darwin scholars – not Darwin himself who have eclipsed Wallace, partly because they have focussed too closely on Wallace's relations with Darwin, especially the tedious issue of the appropriate credit for discovering natural selection. Ironically, the very decision to make Wallace a subject for biography is part of the problem: biographies that focus too narrowly on their subject form a genre that tends to obscure the things – most especially the natural history culture within which he worked – that make someone like Wallace so interesting. Despite a great deal of excellent research and some very readable books, Wallace still stands in urgent need of further study, but I suspect that another straightforward biography will not answer the questions his enigmatic career still raises.

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