

RESEARCH ARTICLE

Of lice and men: Charles Darwin, Henry Denny and the evidence for the human races as varieties or species

Gregory Radick^{1*} and Mark Steadman²

¹School of Philosophy, Religion and History of Science, University of Leeds and ²Independent scholar

*Corresponding author: Gregory Radick, Email: G.M.Radick@leeds.ac.uk

Abstract

Charles Darwin never doubted the common ancestry of the human races. But he was open-minded about whether the races might nevertheless be so different from each other that they ought to be classified not as varieties of one species but as distinct species. He pondered this varieties-or-species question on and off for decades, from his time aboard the *Beagle* through to the publication of the *Descent of Man*. A constant throughout was his concern with something that he first learned on the *Beagle* voyage and that, on the face of it, seemed to favour the species ranking: the different races, he was told, play host to distinct species of lice. This paper reconstructs the long run of Darwin's reflections and interactions on race, lice and history, using his extended correspondence with Henry Denny – curator of the scientific collections of the Leeds Philosophical and Literary Society, and Britain's leading expert in the natural history of lice – as a window onto the social world whose imprint is everywhere in the pages of the *Descent*.

In July 1834, Charles Darwin was on the island of Chiloé, off the coast of Chile. While there he made notes on the lice of the region, and how different they were from English lice. Included was a titbit that he had heard from a shipboard surgeon not long before, concerning a whaling ship where Englishmen served and slept alongside men from the Sandwich Islands. Under such confined conditions, whatever lice infested the Sandwich Islanders could be expected to infest the Englishmen too. But according to the surgeon, a Mr Martial, although the Sandwich Islanders were persistently infested with lice – strikingly deep black, with a distinctive form – the Englishmen did not become so infested. Indeed, when one of the Sandwich Island lice did wander onto English skin, the louse lived only three or four days. Darwin was much intrigued, ending his note with the comment, 'If these facts were verified their interest would be great. – Man springing from one stock according to his *varieties* having different parasites. – It leads one into many reflections.'¹

¹ Entry in Charles Darwin's *Beagle* zoological diary, DAR 31.315, emphasis in original, in the Papers of Charles Darwin, Cambridge University Library. A scan can be viewed at Darwin Online, at <http://darwin-online.org.uk/content/frameset?pageseq=1&itemID=CUL-DAR31.315&viewtype=image> (accessed 29 February 2020). For a transcription see e.g. F. Burkhardt *et al.* (eds.), *The Correspondence of Charles Darwin*, 30 vols., Cambridge: Cambridge University Press, 1985–, vol. 3, p. 38 n. 1. Darwin's books can be easily found at the Darwin Online website, and many of the letters to and from him (including all those we discuss here) at the Darwin Correspondence Project website, at www.darwinproject.ac.uk.

Darwin later crossed out that last line. But it was prophetic: over the decades that followed, he returned over and over again to the surgeon's story and its significance. What is more, from the mid-1840s, another, more expert student of the natural history of lice became part of Darwin's life: Henry Denny (1803–71), curator of the scientific collections of the Leeds Philosophical and Literary Society, and author of an 1842 monograph on British species of sucking lice, Anoplura – the group that includes the lice which trouble humans, the Pediculidae. Denny gets a deferential mention in the chapter on race with which Darwin concluded Part 1 of *The Descent of Man, and Selection in Relation to Sex* (1871): 'I am informed by Mr. Denny that the most different kinds of dogs, fowls, and pigeons, in England, are infested by the same species of *Pediculi* or lice.' In other words, every kind of domesticated dog, despite sometimes extraordinary differences, suffered infestation from just one species of louse. Likewise, there was just one species of louse for all kinds of domesticated fowl, and just one species of louse for all kinds of domesticated pigeon. And yet, on Martial's testimony, humans no different from each other than Englishmen and Sandwich Islanders carried lice so different from each other that there was no cross-infestation.²

What follows is a reconstruction of Darwin's fitful but tenacious attempt to understand the lessons of lice for human unity and diversity. We begin with a closer look at that enigmatic 1834 note – written, of course, several years before Darwin was theorizing, in a full-blown, non-tentative way, about the mutability of species. Ten years later, it was Denny who initiated their interactions, with the aim of improving his specimen holdings in, and so his knowledge of, his specialist group. The Darwin–Denny correspondence of the mid-1840s is instructive for learning what each man had on his mind when it came to lice and humans. But it also provides an opportunity to appreciate afresh, and from a doubly unusual vantage point (an unglamorous organism, studied in an unglamorous place), how and why natural history in Victorian Britain came to be so generously supported, institutionally and intellectually, in ways that Darwin not only profited from but played his part in promoting. Almost twenty years later, Denny revived their correspondence, supplying Darwin with authoritative views which he in turn passed on to readers of his *The Variation of Animals and Plants under Domestication* (1868) and, in a more prominent setting, the *Descent of Man*.

Famously, Darwin late in life described his mind as 'a kind of machine for grinding general laws out of large collections of facts'.³ Attention to that machine's workings is endlessly rewarding. But it can sometimes come at the expense of attention to the wider developments and relationships which made the collection of the facts, and sometimes the facts themselves, possible. (Had there been no whaling ships with cross-racial crews, there would have been no chance to observe what happens to the lice infesting those crews, and so no stories about it all to set Darwin wondering.) In following the trail of Darwin's information about lice, our paper takes inspiration from the burgeoning historiography on evidence collection in the sciences as well as from recent scholarship on the lesser-known *Descent*, such as Julia Voss's study of Darwin on the argus pheasant specimen in the British Museum, Evellen Richards's analysis of Darwin's correspondents on the different standards of beauty at work among the human races, and Ross Brooks's examination of how Darwin dealt with the evidence for sex beyond the bounds of

2 Charles Darwin, *The Descent of Man, and Selection in Relation to Sex*, 2 vols., London: John Murray, 1871, vol. 1, p. 219.

3 Charles Darwin, *Recollections of the Development of My Mind and Character* (1876–1881), in James A. Secord (ed.), *Charles Darwin: Evolutionary Writings*, Oxford: Oxford University Press, 2009, pp. 355–425, 422.

Victorian respectability.⁴ By shining a light on the *Descent*'s evidence, historians potentially illuminate the world outside the book as much as the world within.⁵

1834: on Chiloé

On the most comprehensive scholarly study of Darwin's notes from his years aboard the *Beagle* (1831–6), the origin of species was not a live problem for him when he made his mid-1834 note about Martial's testimony.⁶ Nevertheless, and plainly, Darwin was alert to the interest of a problem with striking parallels: the origin of human varieties. Were the different human races varieties within a single species, all deriving from a common ancestor? Or were they distinct species, each independently derived? And what bearing did the evidence – say, the facts about the different kinds of lice that infest the different kinds of humans – have one way or the other?

Darwin's concern with these questions at this time had multiple roots. For one thing, Charles Lyell, Darwin's recently adopted authority on species and varieties, had asked and answered them in the second (1832) volume of his *Principles of Geology*. There Lyell referred his readers to the writings of Johann Blumenbach, James Cowles Prichard and William Lawrence 'for convincing proofs that the varieties of form, colour, and organization of different races of men, are perfectly consistent with the generally received opinion, that all the individuals of the species have originated from a single pair'. Likewise, Lyell went on, just as the varieties within a species can become so diverse that there can even be 'slight deviation' from what formerly counted as a 'common standard', so in humans, highly divergent physiologies are not in themselves evidence against the races' springing from a common stock. (Lyell raised these points as part of a wider anti-hierarchical case: the human races could not, he insisted, be arranged along a single low-to-high scale, with ape-like races at its low end, Adam-like races at its high end, and 'progressive development and transmutation' as its explanation.)⁷

For another thing, the memory of Darwin's visit to Tierra del Fuego (December 1832 to June 1834) was still fresh, even raw. The *Beagle* voyage as a whole exposed Darwin to a far greater range of human racial diversity than he had ever encountered growing up in Britain. But nothing he had seen in Brazil or Argentina had prepared him for the shock of his encounter with the Fuegians. 'I could not have believed how wide was the difference, between savage and civilized man', Darwin wrote in his popular account of

4 Julia Voss, *Darwin's Pictures: Views of Evolutionary Theory, 1837–1874* (tr. Lori Lantz), New Haven, CT: Yale University Press, 2010, pp. 160–77; Evelleen Richards, *Darwin and the Making of Sexual Selection*, Chicago: The University of Chicago Press, 2017, pp. 456–63; Ross Brooks, 'Darwin's closet: the queer sides of *The Descent of Man* (1871)', *Zoological Journal of the Linnean Society* (2021) 191, pp. 323–46. Beyond Darwin studies, an outstanding contribution to the evidence-foregrounding historiography is Simon Schaffer, 'Newton on the beach: the information order of *Principia Mathematica*', *History of Science* (2009) 47, pp. 243–76.

5 The present paper is one of a quartet of evidence-focused papers on the problems that the human races raised for Darwin and on how he responded. On his handling of the evidence for racial hierarchy – something that he felt he had to defend – see Gregory Radick, 'Race and language in the Darwinian tradition (and what Darwin's language-species parallels have to do with it)', *Studies in History and Philosophy of Biological and Biomedical Sciences* (2008) 39, pp. 359–70; and Radick, 'Did Darwin change his mind about the Fuegians?', *Endeavour* (2010) 34, pp. 51–4. On his inaugurating inquiries into emotional expression to gather evidence for the common ancestry of the races – again, something that he felt he had to defend – see Radick, 'How and why Darwin got emotional about race', in Efram Sera-Shriar (ed.), *Historicizing Humans: Deep Time, Evolution, and Race in Nineteenth-Century British Sciences*, Pittsburgh: University of Pittsburgh Press, 2018, pp. 139–71.

6 See M.J.S. Hodge, 'Darwin, the Galápagos and his changing thoughts about species origins: 1835–7', *Proceedings of the California Academy of Sciences* (2010) 61, pp. 89–106.

7 Charles Lyell, *Principles of Geology*, 3 vols., London: John Murray, 1830–3, vol. 2, p. 62, available in a 1990 facsimile reprint from the University of Chicago Press.

the voyage. 'It is greater than between a wild and domesticated animal, in as much as in man there is a greater power of improvement.' Decades later, in the concluding paragraphs of the *Descent*, he could still summon up his sense of surprise at that discovery. 'The astonishment which I felt on first seeing a party of Fuegians on a wild and broken shore will never be forgotten by me, for the reflection at once rushed into my mind – such were our ancestors.' The puzzle of human racial diversity could hardly have been presented to Darwin in more dramatically vivid form.⁸

A third heritage in play was much older. Darwin belonged to a family that had long been active in the campaign to end black slavery. The great symbol of that campaign – an enchained slave on his knees, pleading, above the words 'Am I Not a Man and a Brother?' – was the work of his maternal grandfather, the pottery manufacturer Josiah Wedgwood. Darwin's other grandfather, Erasmus Darwin, was no less firmly opposed, making room in his risqué 1789 epic poem on Linnaeus's sexual classification system in botany, *The Loves of the Plants*, for an evocation of 'Afric's groves', where, 'with hideous yell / Fierce SLAVERY stalks, and slips the dogs of hell', and a call to British parliamentarians to use their immense power to put an end to this misery, for which he held them responsible ('hear this truth sublime, / 'HE, WHO ALLOWS OPPRESSION, SHARES THE CRIME.') Born into the culture of British anti-slavery, Charles absorbed its values in full. Slavery for him was an abomination, its defenders loathsome.⁹ In 1832, his inability to tamp down his passions on the subject nearly got him booted off the *Beagle*, then anchored in Bahia, in Brazil. The captain, Robert FitzRoy, had told Darwin about visiting a slave owner who, there and then, asked his slaves whether they were happy or preferred instead to be free. The slaves, FitzRoy reported, all insisted that they were content just as they were. Darwin then asked – 'perhaps with a sneer', he recalled in later life – whether they might have given a different answer had their master not been present. Having survived the enraged response, an unchastened Darwin affirmed in a letter home some months later that he would never be won over by Tories like FitzRoy, with 'their cold hearts about that scandal to Christian Nations, Slavery'.¹⁰

To identify as warmheartedly as Darwin did with British anti-slavery was to inhabit a position that was at once moral, political and religious. It had a natural-historical dimension as well. For the anti-slaver of Darwin's stripe, black people were blood relations. They were family. 'Am I Not a Man and a Brother?' got not just a robust 'yes' but a literal gloss: the brotherhood of man was taken to be a genealogical reality, all humans tracing their ancestry back to a single ancestral stock, whose descendants had gradually diverged as they spread around the world, adapting to new conditions. Conversely, slavers were suspected of wanting to justify slavery on the grounds that black people did not share a common origin with white people, and so were not due the same level of moral regard. Darwin showed how deep this set of associations went with him in a post-*Beagle* notebook entry: 'Do not slave holders wish to make the black man other kind?' He returned to the theme years later in a letter to his cousin William Fox, commenting on a recent lecture in Charleston, South Carolina by the Harvard naturalist Louis Agassiz. There Agassiz

8 Charles Darwin, *Journal of Researches into the Geology and Natural History of the Various Countries Visited by H.M.S. 'Beagle'*, London: Colburn, 1839, p. 228; Darwin, op. cit. (2), vol. 2, p. 404. On Darwin's time aboard the *Beagle*, the classic account is in Janet Browne, *Charles Darwin*, 2 vols., London: Jonathan Cape, 1995–2002, vol. 1, pp. 162–340. For a version highlighting the human-racial element, see Adrian Desmond and James Moore, *Darwin's Sacred Cause: Race, Slavery and the Quest for Human Origins*, London: Allen Lane, 2009, pp. 68–110. In correspondence with us, Jim Moore stressed that Darwin's July 1834 Chiloé note 'capped two years of "reflection"s by [Darwin] on the peopling of the continent by migration, he and FitzRoy both assuming common ancestry'.

9 Desmond and Moore, op. cit. (8), esp. pp. 3, 6.

10 Darwin, op. cit. (3), p. 385; Darwin to J.S. Henslow, 18 May–16 June 1832, in Burkhardt *et al.*, op. cit. (1), vol. 1, pp. 236–9, 238.

defended the separate-species, separate-origins view, 'much, I daresay, to the comfort of the slave-holding Southerners', wrote Darwin.¹¹

Darwin, then, was far from dispassionately neutral on the question of whether the human races were merely varieties within a single species, all descended from a common stock, or separate species with separate origins. He came to the question predisposed to favour the common-ancestry view. Given that predisposition, however, what could he have meant when, on Chiloé in 1834, he wrote that there was much to reflect on in the apparent fact that different varieties of human have parasites so different as to rank as different species?¹² It is hard to see how he could have welcomed that fact as surprising new evidence for common ancestry. On the contrary, the more straightforward prediction of the common-ancestry view would be that, as humans diverged into ever-proliferating new varieties, their parasites diverged in tandem, so that the changes marking off each new human variety marched in step with the changes marking off each new louse variety. If Darwin had learned from Martial that all of the different kinds of human-infesting lice were merely varieties within a single species, we could easily imagine Darwin celebrating that fact as just what the naturalist would expect on the common-ancestry view of human racial origins, since on that view, the infested humans were themselves merely varieties within a single species.

But, of course, Darwin learned the opposite fact: the different kinds of human come with different species of lice. Did that not suggest that, whatever the appeal of the common-ancestry view on other grounds, it might be mistaken, and that humans too, like their parasites, are different species (albeit sprung from a single stock)? As we shall see, in the Denny-citing passage in the *Descent of Man*, Darwin acknowledged this possibility explicitly. In his July 1834 note, however, there is no sign at all that Darwin was in any way wavering in his commitment to the compound common-ancestry/varieties-not-species view.

A plausible way out of this interpretive impasse is to suppose that Darwin was already aware of something that he would write about ten years later in his correspondence with Denny: the surprisingly close adaptive relation that can exist between a parasite and the physiology of its habitual host, such that even small changes in the host's physiology can make it inhospitable for the parasite. If a species of louse can successfully parasitize a particular variety of human only by being minutely tuned in to the intricacies of that variety's distinctive physiology, it may be that the physiological changes which accompany the emergence of a new human variety from an existing one require a magnitude of change in the louse so great that, to keep up, the louse species would need to be transformed into a new species. But of course, for 1834 Darwin, that was not a serious option. Instead, we need – if we are to follow Darwin – to imagine that, on an Earth already well supplied with a range of *Pediculi* species, that range included at least one species that would be a physiological match for each human variety as it emerged, thanks to divergent descent from the ancestral stock. Cometh a new variety of human, then, cometh the louse species fit to parasitize that variety – but where the new varieties of human arose from pre-existing varieties, the lice parasitizing the new human varieties were new only in the sense of being freshly arrived on the human scene.

11 B231, transcribed in Paul H. Barrett, Peter J. Gautrey, Sandra Herbert, David Kohn and Sydney Smith (eds.), *Charles Darwin's Notebooks 1836–1844*, London and Cambridge: Natural History Museum and Cambridge University Press, 1987, p. 228; Darwin to W.D. Fox, 4 September 1850, in Burkhardt *et al.*, op. cit. (1), vol. 4, pp. 353–5, 353. On the general perception that support for black slavery and support for a separate-origins account of the human races went together see Radick, 'How and why Darwin got emotional about race', op. cit. (5), esp. pp. 163–4.

12 After the voyage, Darwin pencilled in the clarifying 'species of' before 'parasites'. The whole concluding note is lightly scribbled through.

The above has the merit of cohering with what seem to have been Darwin's beliefs about species fixity and human ancestry in mid-1834. But otherwise it is hardly very satisfying, either in itself (how were these super-sensitive lice species managing to survive before the arrival of their matched human hosts?) or as a prop for the common-ancestry-of-humans view (where, again, discovering that the different kinds of humans suffer infestation from different varieties of lice would have been much more straightforwardly helpful). No wonder Darwin never stopped thinking about it all.

Henry Denny: between design-directed natural history and the new era of popular science

We are accustomed to seeing Darwin at the centre of his correspondence network, sending out questions and requests generated by his own multiplying research programmes, getting back answers and specimens. But it could go the other way, and especially so before 1859, when Darwin, although famous and esteemed, was not yet a towering figure. So it was with Darwin and Henry Denny.¹³

Born in Norwich in 1803, Denny became a protégé of 'the father of British entomology', the cleric-naturalist William Kirby, who was based in the not-too-distant village of Barham. Kirby's four-volume *Introduction to Entomology* (1815–26), co-authored with his friend William Spence, instantly became the standard popular work in English on its subject, at the beginning of an era when popular science – under that name, and taking diverse forms, from cheap publishing to mechanics' institutes to the proliferation of provincial scientific societies – thrived as never before in Britain. Denny was initially hired by Kirby to help with the production of the later volumes of the *Introduction*, especially with the technically demanding and time-consuming business of preparing specimens, producing illustrations (Kirby arranged for Denny's training in engraving), and overseeing their passage into print. Denny did the job so well that the *Introduction* may have secured Denny's reputation as much as it did Kirby and Spence's.¹⁴

Kirby was a benevolent patron. Writing to Denny in 1822, Kirby stated that he had 'long felt a wish, if it could by any means be accomplished, to introduce you to constant and remunerating employment'. Probably it was Kirby's connections in the wider scientific community that landed Denny his appointment as sub-curator at the newly established Philosophical Hall of the Leeds Philosophical and Literary Society. That same year he published his first monograph, on British species of two genera of beetle.¹⁵

13 On Denny and his world see esp. Mark Steadman, 'A history of the scientific collections of the Leeds Philosophical and Literary Society's museum in the nineteenth century', PhD thesis, University of Leeds, 2020. Also useful is Robert Harrison (rev. Yolanda Foote), 'Denny, Henry', *Oxford Dictionary of National Biography*, online edn, Oxford: Oxford University Press, 2004 (accessed 8 November 2019); and an obituary notice in *Nature* (23 March 1871) 3, p. 413.

14 A helpful introduction to Kirby's life and work is J.F.M. Clark, 'Kirby, William', in Bernard Lightman (ed.), *Dictionary of Nineteenth-Century British Scientists*, 4 vols., Bristol: Thoemmes Press, 2004, vol. 3, pp. 1147–8. (Lyell cited Kirby and Spence on bee instincts in Lyell, op. cit. (7), vol. 2, p. 58.) On popular science in early nineteenth-century Britain see Jonathan R. Topham, 'The scientific, the literary and the popular: commerce and the reimagining of the scientific journal in Britain, 1813–1825', *Notes and Records of the Royal Society* (2016) 70, pp. 305–24, esp. 310–11. On Kirby's publication enterprise and the specialist skills it depended upon see Topham, *Reading the Book of Nature: Science, Religion, and the Culture of Print in the Age of Reform* (forthcoming).

15 Kirby to Denny, 17 May 1822, quoted in William Freeman, *Life of the Rev. William Kirby, Rector of Barham*, London: Longman, Brown, Green, and Longmans, 1852, p. 403; Henry Denny, *Monographia Pselaphidarum et Scydmaenidarum Britanniae: or, An essay on the British species of the genera Pselaphus, of Herbst, and Scydmaenus, of Latreille; in which those genera are subdivided, and all the species hitherto discovered in Great Britain are accurately described and arranged, with an indication of the situations in which they are usually found*, Norwich: S. Wilkin, 1825.

Paid, full-time appointments in natural history were very rare this early on in nineteenth-century Britain.¹⁶ Upon the opening of Philosophical Hall in 1820, the society had not intended the museum to take such a prominent role. Documents from the time reveal that the society had wanted first to establish a lecture hall, then to fit out a laboratory and then a library 'more strictly scientific than any public collection now in Leeds'. Only after these objectives were achieved, and while 'keeping in mind the state of funds', would a museum be considered 'as and when finances dictated', and even then only 'by degrees'.¹⁷ However, in contrast to the reticence shown by the society, the Leeds public began immediately donating material to the new museum. The society's first printed report for the 1820–1 session described donations of 'plants, birds, quadrupeds, minerals' arriving at a time when Philosophical Hall was still being completed.¹⁸

Acquisitions at Leeds were subject throughout to a public will to donate, especially enthusiastically in the area of natural history. This largesse tended to overwhelm the academic and socially oriented aims and interests within the museum and society. In just a few years, the physical demands that such unpredicted, ad hoc acquisitions brought with them overwhelmed Philosophical Hall and the society's resources.¹⁹ Never fully able to gain control of the disorienting side effects of such contingencies, John Atkinson (1787–1828), the incumbent honorary curator, canvassed the society for better facilities as early as 1824. It seems that the society hoped that a full-time appointment of sub-curator would solve the problem, or at the very least placate the frustrations of their honorary curator.²⁰

A post created to help the society cope with an unexpected deluge of objects looked like just the sort of professional berth that Denny, and Kirby, had been hoping for. As a candidate for the position, Denny was impeccable, with 'decided testimonials of gentlemen eminent for scientific attainments' ornamenting an already admirable record of achievement.²¹ Under Denny's energetic stewardship, the scientific collections at Leeds rapidly grew in size and stature, with Denny organizing the materials as well as exhibits, publications and lecture series. (Along with his ever-larger family, he actually lived in Philosophical Hall.) His curatorial term, the longest of any of the Leeds curators, coincided with arguably the most fertile period for the museum and society. From 1825 through to his death in 1871 – not long after the publication of the *Descent* – Denny orchestrated an impressive programme that attracted interest and involvement from key names within the sciences and beyond. These achievements came despite the stream of unbidden donations, the impact they had upon space and resources, and the growing concerns and discontent within the society, at a period of significant industrial expansion and population growth within provincial contexts like Leeds.²²

Hugely busy though he was managing the museum, Denny nevertheless kept up with his research interests – focused, from the mid-1820s, on parasitic insects. In 1842, he brought out a second monograph, on British Anoplura, a subgroup of sucking lice,

16 On the paucity of such positions see William Brock, 'The spectrum of science patronage', in G.L'E. Turner (ed.), *The Patronage of Science in the Nineteenth Century*, Leyden: Norhoff, 1976, pp. 173–206.

17 Prospectus of preliminary laws for the establishment of a Philosophical and Literary Society in Leeds, 1819, MS DEP 1975/1/11, (i), in the Papers of the Leeds Philosophical and Literary Society, Special Collections, Brotherton Library, University of Leeds.

18 LPLS Annual Report 1820–1.

19 For an overview see Steadman, op. cit. (13), pp. 273–90.

20 At the time Atkinson described Philosophical Hall as being 'neither sufficiently commodious, nor in any respect eligible, for the purposes of an increasing and valuable collection'. LPLS Annual Report 1824–5, pp. 5–7. On Atkinson see the obituary notice in the *Philosophical Magazine or Annals of Chemistry, Mathematics, Astronomy, Natural History and General Science* (July–December 1828) 4, pp. 395–6.

21 LPLS Annual Report 1825–6, p. 6.

22 Steadman, op. cit. (13). Leeds officially became a city only in 1893.

including the lice infesting humans. The book is everything one might have expected from a Kirby-trained naturalist: a work of meticulous description and classification, decked out with pious quotations on design in nature as exhibiting God's goodness and wisdom. (Kirby contributed a volume on insects to the publishing sensation in 1830s British natural theology, the *Bridgewater Treatises*.)²³ Not long after, a request from the British Association for the Advancement of Science (BAAS) led Denny from domestic species of lice to 'exotic' ones – and it was his search for specimens of the latter that, in January 1844, prompted a first bout of correspondence with Darwin, to see whether he might send some lice collected during the *Beagle* voyage.²⁴

1844–7: Denny, Darwin, Lyell and lice

Darwin wrote back positively, warning, however, that he had not collected a lot of lice, but assuring Denny that in the near future, when the long-postponed organizing of the *Beagle* zoological collections was under way, he would put aside whatever he found. In midsummer, Darwin delivered, sending Denny four packets of lice for display at the 1844 BAAS meeting, due to take place at York between late September and early October, and also writing to the botanist Joseph Hooker, who had travelled to Antarctica, to ask for penguin-infesting lice that Denny might also show at York.²⁵

At this point in the surviving correspondence there is a rather huffy letter from Darwin. Among the lice sent to Denny was a specimen identified by Darwin as coming from a wild guinea pig but, to Denny's eye, looking nothing at all like the lice which infest domesticated guinea pigs. Maybe there had been a mix-up? Perhaps, while collecting, had Darwin placed the dead guinea pig in the same hunting bag with, say, dead birds, and lice from the birds crawled onto the guinea pig? (The louse that Darwin had identified as from a guinea pig looked like it was from a waterfowl.) 'I took such especial pains, in myself always doing up every specimen, that I am astonished & can hardly believe there has been a mistake', replied Darwin.

It is possible[, however,] I may have brought home the dead specimen in the same bag with birds & the parasites from the latter have crawled on the former; but I feel no doubt that I with my own hands took the Lice off the *Aperea* [guinea pigs] & put them into spirits.²⁶

Without quite backing down, Denny sent a mollifying letter in response, brimming with information, questions about the biogeography of lice and the relation of wild to domesticated guinea pigs, and so on. In the final surviving letter from their 1844 exchanges, from early November, Darwin replied in kind, adding too that he had a more general project in view: 'I am deeply interested in everything connected with geographical distribution, & the differences btwn species & varieties.'²⁷

²³ Henry Denny, *Monographia Anoplurorum Britanniae, or, An essay on the British species of parasitic insects belonging to the order Anoplura of Leach*, London: Henry G. Bohn, 1842.

²⁴ Only Darwin's response to Denny's first letter survives: Darwin to Denny, 20 January [1844], in Burkhardt *et al.*, op. cit. (1), vol. 3, pp. 3–4. See p. 4 n. 1 for details of the BAAS committee that approached Denny to take on the new research.

²⁵ Darwin to Denny, 20 January [1844], op. cit. (24); Darwin to Denny [27 July–10 August 1844], in Burkhardt *et al.*, op. cit. (1), vol. 13, pp. 359–60; Darwin to Hooker [1 August–29 August 1844], in Burkhardt *et al.*, op. cit. (1), vol. 3, pp. 49–50 (we give the corrected date range specified in vol. 13, pp. 359–60 n. 1).

²⁶ Darwin to Denny, 12 August [1844], in Burkhardt *et al.*, op. cit. (1), vol. 3, p. 53. The content of Denny's prompting letter can be inferred from his 30 October 1844 letter, cited below.

²⁷ Denny to Darwin, 30 October 1844, and Darwin to Denny, 7 November [1844], in Burkhardt *et al.*, op. cit. (1), vol. 3, pp. 73–5, 75.

Here, then, is a correspondence between a curator and a collector, both engaged in what the era designated ‘philosophical natural history’, with information as well as specimens flowing between them.²⁸ But species of lice, and the guinea pigs and birds which lice infest, were not all that Denny and Darwin wrote about. Their letters also dealt with human races. An extraordinary letter from Darwin in early June touched on Martial’s testimony, on why it should probably be trusted (Martial was not educated enough to make it up), on why the common ancestry of the human races should be treated as still to be established (rather than as a taken-for-granted premise in reasoning), and on how additional, non-lousy evidence likewise suggested that, when it came to humans and their parasites, even tiny physiological differences in the former went with species-level differences in the latter:

You are at perfect liberty to mention Mr Martials story – I forget whether I said, he was a surgeon of a whaler, but a rather worthless, slightly educated man; perhaps, however, in some respects his story is less likely from this cause to have been invented. – I myself do not think our supposed knowledge of having come from one stock ought to enter into any scientific reasoning. Anyhow, the inhabitants of eastern & western Europe have different species of intestinal worms ... P.S. | I have been informed that the Pediculi generally, if not invariably, perish on wild animals in their passage to England, or in captivity. This, perhaps, may bear on their death in Mr Martial’s story. A slight fever, or even a *broken limb with no fever* has been known to cause the evacuation of the intestinal worms in a person – facts which show by what slight changes in constitution parasites are affected.²⁹

A postscript in another letter, sent in late July or early August 1844 along with the packets of lice, carried on the conversation. Darwin’s reading notebooks show that in May or June of that year – so at just the moment when the human races entered into his correspondence with Denny on lice – Darwin had finally got around to reading an old book defending the separate origins of the human races: Charles White’s *An Account of the Regular Gradation of Man* (1799). Darwin had noted both author – a Manchester-based man-midwife – and title on a little to-do list near the end of his Notebook B, filled between July 1837 and March 1838: the first and most famous of his secret transmutation notebooks, headed ‘Zoonomia’ and including the famous tree image. Darwin later crossed out the reading-notebooks entry, adding Lyell’s unsurprisingly dismissive judgement on White’s book: ‘Poor trash Lyell’. But Darwin habitually found gems even in otherwise unpromising sources, such as his chat with the surgeon Martial. From White, Darwin likewise found something noteworthy about lice and humans: that, in White’s words, ‘the lice which infest the bodies of negroes are blacker, and generally larger, than those which are found on white people’ – an observation White credited to another separate-origins-of-the-races man, the slave owner Edward Long, in his *History of Jamaica* (1774). The postscript in Darwin’s letter to Denny is basically an apology for not being able to give a citation to the relevant passage in White’s book – ‘a foolish book with some odd facts’.³⁰

²⁸ On philosophical natural history as concerned to explain causally the results of descriptive natural history see Jonathan Hodge and Gregory Radick (eds.), *The Cambridge Companion to Darwin*, 2nd edn, Cambridge: Cambridge University Press, 2009, pp. 13–14.

²⁹ Darwin to Denny, 3 June [1844], in Burkhardt *et al.*, op. cit. (1), p. 38, emphases in original.

³⁰ Darwin to Denny [27 July–10 August 1844], op. cit. (25), quotations on pp. 360 (from White), 359 (from Darwin on White). For the dating of Darwin’s reading of White see Burkhardt *et al.*, op. cit. (1), vol. 4, pp. 467–8, referred to in vol. 13, p. 360 n. 6. For the Notebook B entry (272), see Barrett *et al.*, op. cit. (11), p. 235; and, for discussion, Desmond and Moore, op. cit. (8), p. 179. In unpublished work generously shared with us, Jim Moore pointed out that William Lawrence, in his famous 1822 *Lectures on Man* (a book familiar to

Notebook B, we should note in passing, briefly registered the shift in Darwin's thinking about the lice–humans puzzle after he had let go of the fixity of species. Recall that, with the fixity of species presumed, the tracking of small-scale, variety-level changes in humans by large-scale, species-level changes in lice could have come about only via incessant goings and comings of new lice species. When that presumption was dispensed with, this tracking could come about via the transmutation of lice species, existing ones giving rise gradually to new ones. That possibility would suggest in turn that lice – and maybe even larger taxonomic classes to which lice belonged, such as the arthropods ('Articulata', in Cuvier's old classification) – can evolve rather speedily, certainly compared with humans, and maybe even with vertebrates generally. Accordingly we read, at B252: 'If Parasite different, whilst man & his domesticated quadrupeds are not so. greater facilities of change in the articulate than Vertebrate.'³¹

Writing to Lyell in October 1845, Darwin repeated Long's claim about the distinctive kinds of lice infesting West Indian slaves, in a letter sent while Lyell was touring around the United States. As Darwin explained, for him, Martial's testimony counted in favour of taking the claim seriously, so much so that Lyell should try and collect some of the lice infesting black people in the States – not for Darwin's inspection, but for the far more expert Denny:

I may mention (however unlikely you may be to take up so disgusting a subject) that it has been asserted that on the negros born in N. America, the lice are larger & of a blacker colour, than the common species; & that the European lice will not live on negroes. From some analogous statements made to me with respect to the men of the Sandwich islands, I am inclined to believe there may be some truth in these statements. Mr. Denny (to whom I communicated specimens & this information) wd. be most grateful for specimens, if you cd get them in *spirits*, through some medical man, who cd get them through some nurse to some Hospital &c &c I suggest this as a feasible means, without disgusting yourself much.³²

Lyell did as asked, although, when Darwin wrote again to Denny in July 1847, he was unsure whether Denny had received Lyell's specimens. Darwin wrote to express regret that he and Denny had failed to meet up at the recent BAAS meeting in Oxford, with Darwin explaining that he had not stayed long, had not realized Denny was there, and in any case that Darwin's poor health had meant that he missed out on seeing even people whom he knew were there. Darwin also took the opportunity to let Denny know that he

Darwin), cited White and Long to the same purpose, and furthermore that Darwin went on to make use of White's book in the *Variation*, quoting White's calculation of the changing proportions of whites, blacks and 'mulattoes' in succeeding generations of a colony founded by equal numbers of whites and blacks. For the latter see Charles Darwin, *The Variation of Animals and Plants under Domestication*, 2 vols., London: John Murray, 1868, vol. 2, p. 87. On Long see Suman Seth, *Difference and Disease: Medicine, Race, and the Eighteenth-Century British Empire*, Cambridge: Cambridge University Press, 2018, pp. 208–40.

31 In Barrett *et al.*, op. cit. (11), p. 233 (we have omitted a seemingly stray '<M>' before 'Vertebrate'). As ever, the best arguments against Darwin are in Darwin: after the quoted line, he added, 'But how does this agree with longevity of species in Molluscs!!!' At C234 (p. 313), he tried a different tack: 'Why if louse created should not new genus have been made, & only species, good argument for origin of man one' – i.e. why, if each species of human-infesting louse was created for each race of human, should those species nevertheless belong to the same genera and families that infest non-human species? A version of the thought survives in the first, descent-establishing chapter of the *Descent*: 'Man ... is plagued by external parasites, all of whom belong to the same genera or families with those infesting other mammals.' Darwin, op. cit. (2), vol. 1, p. 12.

32 Darwin to Lyell, 8 October [1845], in Burkhardt *et al.*, op. cit. (1), vol. 3, pp. 258–9, 258. On Lyell's being in the States from September 1845 see vol. 4, p. 57 n. 2.

was free to keep any duplicate specimens for himself, with the rest to go to the British Museum.³³

1865–71: Denny as Darwin's authority

Darwin and Denny soon became otherwise occupied: Darwin with research resulting in, most conspicuously, his four volumes on barnacle taxonomy (1851–5), *On the Origin of Species* (1859) and his book on orchids (1862); Denny with the continued thriving of the Leeds Museum. But in the mid-1860s, Denny resumed his long-lapsed work on exotic lice species (the BAAS report was never published) and discovered, in getting reacquainted with his old materials, a page of *Beagle*-vintage notes on *Pediculus* that Darwin had sent along with the lice packets.³⁴ In a letter to Denny in mid-January 1865 thanking him for the return of something that Darwin too had forgotten about, Darwin expressed pleasure that Denny's studies of lice were back on, 'for I always thought they would lead to valuable & curious results'. Darwin was now engaged in the work that would culminate in the 1868 publication of the two-volume *Variation*, which, for some while, was to include a chapter on man. Accordingly, Darwin used the occasion to pepper Denny with questions along these lines. Those lice from Chiloe: were they, in Denny's judgement, a 'distinct species', or merely 'a well-marked variety'? More generally, what should one make of Martial's (or maybe, as now, 'Marshall's') story about the lice from the Sandwich Islanders? 'I shd. be grateful for any information on this head, *especially* if you would permit me to quote you as my authority', Darwin added.³⁵

Denny's response dwelt exclusively on the question of the human races. We must, he thought, disentangle Martial/Marshall's story about lice from one kind of human not surviving on another kind of human from the various taxonomic issues, for lice and for humans. To take the story first: it seemed, on the face of it, very doubtful, in Denny's judgement. Yes, the lice infesting the Sandwich Islanders might well have appeared, to a non-expert, distinctive in form and coloring. But there was no reason to think that the different human races were immune to infestation from each other's lice. In support Denny cited the belief of Tasmanians that they had been louse-free until contact with Europeans. Of course, Denny went on, the Tasmanian practices of shaving their bodies and smearing fat and ochre into their hair probably arose in the first place as defences against native lice – defences, moreover, which plainly had worked until colonization by Europeans and their lice. (Here was an entomological version of a phenomenon widely familiar for introduced plants and mammals across the imperialized globe: the newcomers swiftly took over.) Along with the letter Denny sent an 1860 paper, 'On the Pediculi infesting the different races of Man', by the Edinburgh lawyer and naturalist Andrew Murray, who showed that, in line with Denny's speculation about Tasmania, Australia had its own, distinctive, humans-infesting Pediculi.³⁶

33 Darwin to Denny, 21 July [1847], in Burkhardt *et al.*, op. cit. (1), vol. 4, pp. 56–7. On six of Darwin's lice specimens remaining in the British Museum see p. 57 n. 1 (top of page). On the possibility that four other specimens might be in the Denny collection in the University Museum at Oxford, see vol. 13, p. 26 n. 4.

34 At the York BAAS meeting in 1844, Denny had seemed to be well on his way to publication, having already made drawings of ninety species, with over a third of the drawings already turned into copper-plate engravings; see Henry Denny, 'Report of the progress of the investigation of exotic Anoplura', *BAAS Report* 1844, p. 392.

35 As with the first bout of correspondence, so with the second: only Darwin's response to Denny's opening letter has been found. See Darwin to Denny, 17 January [1865], in Burkhardt *et al.*, op. cit. (1), vol. 13, pp. 26–7, emphasis in original. On the projected chapter on humans for the *Variation* see Desmond and Moore, op. cit. (8), pp. 209, 358–9.

36 Denny to Darwin, 23 January 1865, in Burkhardt *et al.*, op. cit. (1), vol. 13, pp. 37–9, with a biographical sketch of Murray on pp. 550–1; Andrew Murray, 'On the pediculi infesting the different races of man', *Transactions of the Royal Society of Edinburgh* (1860) 22, pp. 567–78.

On the matter of varieties-or-species and the human races, Denny found the evidence more equivocal. Yes, distinctive kinds of humans carried distinctive kinds of lice. But in Denny's view, the differences characterizing the lice were no greater than the differences characterizing their hosts. So were those differences variety-level or species-level? On the one hand, Denny wrote, he presumed the human races to be different species within a single genus – and so, on those grounds, one should be willing to classify the lice as different species, given the same degree of differences among them as among their hosts. On the other hand, 'the *same species* of Lice infest the different *varieties* of Fowl, Dogs & Pigeons' – facts which seemed to point in the other direction. In any case, Denny concluded, on a note which suggests he had kept up with Darwin's more recent publications, 'The transition between species in some instances is so gradual that it becomes difficult to say where the *variety* or *Species*, begin or terminate!'³⁷

Darwin immediately fastened onto Denny's statement about lice in dogs, fowls and pigeons as the most important for his purposes. 'Now as I understand this', Darwin commented in his letter back, 'you have never observed distinct varieties of the same species of *Pediculus* on different domestic varieties. – If, as is probable, I allude to this subject, I shd. like to quote on your authority this statement.' But as ever, and making due apologies, Darwin wanted to know much more. Had Denny studied domesticated mammal and bird varieties extensively? Had he perhaps even had the opportunity to compare their lice with the lice on varieties raised in other, distant parts of the world? Any light Denny could throw on these wider dimensions of the topic would, Darwin indicated, increase the value of what he had already shared so helpfully.³⁸

Alas, as Denny explained in his response nearly two months later, he had done little along these lines. But he did address the outstanding questions about Darwin's South American lice, or at least one of them, to do with the lice that Darwin had collected from the wild guinea pigs of La Plata, the *aperea*. Whether or not those lice counted as distinctive species or not, what mattered, in Denny's view, was that they belonged to a different genus from the lice on domesticated guinea pigs, so that – presuming, now, that there had been no mix-up, and that Darwin's lice really did come from those *aperea* – the only safe inference was that the *aperea* were not, in fact, the wild progenitors of domesticated guinea pigs! Darwin wrote back to say that he had come independently to the same view, and when the *Variation* appeared, it cited Denny accordingly in a footnote.³⁹

This brief March 1865 thank-you note – which also offered some advice on how Denny might pursue studies with pigeons – is the last letter in the surviving correspondence. But there was to be one more drawing on it by Darwin. Here is the full paragraph from the *Descent* in which the Denny-referencing sentence appears, along with remarks on Andrew Murray's Denny-supplied paper and also on Martial/Marshall (who, we now

37 Denny to Darwin, op. cit. (36), emphases in original. Although Denny almost certainly read the *Origin of Species* – a first edition is held in the Leeds Library – we have not been able to establish Denny's views on evolution, whether Darwin's theory of it or any other. On the related question of the 'antiquity of man', however, it is worth noting that from the mid-1850s Denny sided with those arguing, against Richard Owen, that humans had coexisted with the extinct giant Irish elk. See Henry Denny, *On the Claims of the Gigantic Irish Deer to Be Considered as Contemporary with Man*, Leeds: E. Baines & Sons, 1855. (Visitors to the Leeds City Museum today can see – not far from the Denny Room – a splendidly antlered specimen acquired in Denny's time.) And in the 1860s, the Philosophical Hall lecture programme that Denny oversaw included talks from a number of Darwin's allies, including Alfred Russel Wallace, Francis Galton and Thomas Huxley.

38 Darwin to Denny, 28 January [1865], in Burkhardt *et al.*, op. cit. (1), vol. 13, pp. 42–3. The links Darwin saw between the question of whether lice alter under domestication along with their hosts and the question of what to make of the lice infesting human races went back a long way, at least to his *Beagle*-vintage 'Catalogue of animals in spirits and wine'; see, in the same volume, p. 26 n. 5.

39 Only Darwin's reply has been found: Darwin to Denny, 23 March [1865], in Burkhardt *et al.*, op. cit. (1), vol. 13, pp. 89–90; Darwin, op. cit. (30), vol. 2, p. 152.

learn, not only told Darwin about lice on that whaling ship, but gave him some lice from the natives of Chiloe):

In determining whether the varieties of the same kind of domestic animal should be ranked as specifically distinct, that is, whether any of them are descended from distinct wild species, every naturalist would lay much stress on the fact, if established, of their external parasites being specifically distinct. All the more stress would be laid on this fact, as it would be an exceptional one, for I am informed by Mr. Denny that the most different kinds of dogs, fowls, and pigeons, in England, are infested by the same species of *Pediculi* or lice. Now Mr. A. Murray has carefully examined the *Pediculi* collected in different countries from the different races of man; and he finds that they differ, not only in colour, but in the structure of their claws and limbs. In every case in which numerous specimens were obtained the differences were constant. The surgeon of a whaling ship in the Pacific assured me that when the *Pediculi*, with which some Sandwich Islanders on board swarmed, strayed on to the bodies of the English sailors, they died in the course of three or four days. These *Pediculi* were darker coloured and appeared different from those proper to the natives of Chiloe in South America, of which he gave me specimens. These, again, appeared larger and much softer than European lice. Mr. Murray procured four kinds from Africa, namely from the Negroes of the Eastern and Western coasts, from the Hottentots and Caffres; two kinds from the natives of Australia; two from North, and two from South America. In these latter cases it may be presumed that the *Pediculi* came from natives inhabiting different districts. With insects slight structural differences, if constant, are generally esteemed of specific value: and the fact of the races of man being infested by parasites, which appear to be specifically distinct, might fairly be urged as an argument that the races themselves ought to be classed as distinct species.⁴⁰

The paragraph comes from early in the chapter, where Darwin is evaluating the evidence first for (as here) and against the view that the human races are so different as to count as distinct species. Ultimately, he suggests, the difficulty in resolving the issue – and the evidence, he shows, weighs more or less equally on each side of the balance – can be put aside by anyone who accepts the principle of evolution, in the company of ‘the greater number of rising men’. For on that principle, the varieties-or-species question can be seen as separate from, and secondary to, the question of descent from a shared common ancestor. And on that question, Darwin affirms, there is no room at all for doubt. In their near-identical structures, constitutions and habits, down to the tiniest details of emotional expression, the human races show community of descent. Any other explanation would be, as Darwin puts it, ‘incredible’. With common ancestry now secured, Darwin goes in, over the rest of his long book, to try and explain how, within that unity, there arose so much diversity.⁴¹

Conclusion

Any shortlist of totemic Darwinian organisms would include the finch, the tortoise, the orchid, possibly the earthworm. The louse does not even make the longlist. But for getting to grips with the *Descent*, the world that produced it, and its myriad legacies, the louse

40 Darwin, op. cit. (2), vol. 1, pp. 219–20 (unchanged in 2nd edn of 1874).

41 Darwin, op. cit. (2), vol. 1, pp. 229, 231. For the overall structure and strategy of the *Descent* see Gregory Radick, ‘Darwin and humans’, in Michael Ruse (ed.), *The Cambridge Encyclopedia of Darwin and Evolutionary Thought*, Cambridge: Cambridge University Press, 2013, pp. 173–81, esp. 175–7.

turns out to be surprisingly instructive. Tracking the spoor of Darwin's interest in it, from *Beagle* days onward, gives a newly concretized sense of where, on the matter of race, he was prepared to be flexible (varieties-or-species) and where not (common ancestry); what changed and what did not in his theorizing after his commitment to transmutation became full-blown (among other things, it became much easier to make sense of how species-level changes in lice went with variety-level changes in humans); whom he judged worth learning from and why (pretty much anyone: a Martial/Marshall, because he was too uneducated to make stuff up; a Denny, because he was a museum-based expert); and how much he benefited from the popular growth of interest in the sciences in his time and place. As we have seen, that growth was reflected in everything from the great demand for Kirby's entomological publications, without which Denny would never have received elite training in entomology; to the creation of provincial scientific self-help groups like the Leeds Philosophical and Literary Society; to the forcing of that society's hand, as donations from the public poured in, in the hiring of a full-time curator to look after its collections, thus furnishing Denny with the kind of employment that would enable him to become, in time, the louse expert that Darwin needed. We have seen too, in the interstices, all that generous sharing out of information and/or specimens: Martial/Marshall to Darwin, Darwin to Denny, Denny to Darwin.

In the end, thirty-five years of on-and-off reflections and researches on lice and men netted Darwin exactly one paragraph in a nearly nine-hundred-page book – and a paragraph, moreover, tending to support a view that he did not endorse, indeed came to regard as, from an evolutionary perspective, irrelevant. Ian Hacking, in an outstanding essay on the persistence of 'race' talk and thinking, at one point recommends a return to the *Descent*, above all for the standard it set in the judicious handling of its complex materials. The book, writes Hacking, is 'truly a humbling read: the wealth of information, the variety of considerations, the caution about conclusions – the imaginative framing of tentative hypotheses overshadows anything written since about his topics, including race'.⁴² Darwin's lice-and-races paragraph, when viewed as the end product of the story reconstructed above, serves as a micro-scale example of what Hacking admires at the macro scale.

Beyond the *Descent*, the evolutionary study of lice and humans went on to have a lively history in its own right. Whenever that history receives the study it deserves, one highlight – and a source to be mined for understanding developments in the 'eclipse of Darwinism' period – will surely be the first louse chapter in Hans Zinsser's jauntily written classic of idiosyncratic scholarship, *Rats, Lice, and History* (1935). A biography of typhus, it touched on lice as carriers indispensable to the life cycle of the pathogen, with no stinting on the long-run evolutionary history of the louse and the variations it acquired after, having infested early savage humans, it diversified along with humans. Today, wrote Zinsser, 'it would seem that we can deduce some information as to human racial relationship from the characteristics of the lice found in different parts of the world'.⁴³ In our time, too, the idea that our lice hold evolutionary lessons for humankind's deep-past history continues to appeal, even with the passing from official evolutionary science of enthusiasm for race-focused inquiries. In 2004, news organizations reported the publication of a paper purporting to show, on the strength of genomic analyses, that our *Homo sapiens* forebears acquired their lice from encounters with *Homo erectus*, probably in Asia.

⁴² Ian Hacking, 'Why race still matters', *Daedalus* (2005) 134, pp. 102–16, 114.

⁴³ Hans Zinsser, *Rats, Lice, and History*, London: George Routledge & Sons, 1935, pp. 166–78, 175. For interest among Zinsser-era biologists in experiments purporting to show the Lamarckian transformation of head lice into body lice see Gregory Radick, 'Animal agency in the age of the modern synthesis: W.H. Thorpe's example', *BJHS Themes* (2017) 2, pp. 35–56, 43. Many thanks to Adrienne Jessop for discussion of these experiments.

(‘Lice could have jumped from them on to our ancestors during fights, sex, clothes-sharing or even cannibalism’, in the BBC’s summary.)⁴⁴

After Darwin, there lies a further history whose history has barely been scratched here. Fittingly, contact with the louse leaves one itching for more.

Acknowledgements. This paper began as the 2009 Joseph Priestley Lecture of the Leeds Philosophical and Literary Society and the Leeds Library. We are grateful to these organizations and to our audience on that occasion; to Erika Milam and Suman Seth for inviting and then nurturing this written version; and to Jon Hodge, Jim Moore and two anonymous referees for many helpful suggestions.

⁴⁴ Paul Rincon, ‘Extinct humans left louse legacy’, *BBC News*, 6 Oct. 2004, at <http://news.bbc.co.uk/1/hi/sci/tech/3715132.stm> (accessed 1 March 2020); also Bridget Alex, ‘What the bugs that live on our bodies say about human history’, *Discover*, 11 Nov. 2019, at www.discovermagazine.com/planet-earth/what-the-bugs-that-live-on-our-bodies-say-about-human-history (accessed 1 March 2020).