



**Saint Catherines Press**  
**The History of Science Society**

---

Wallace in the Field

Author(s): Jane R. Camerini

Source: *Osiris*, 2nd Series, Vol. 11, Science in the Field (1996), pp. 44-65

Published by: The University of Chicago Press on behalf of The History of Science Society

Stable URL: <http://www.jstor.org/stable/301926>

Accessed: 25/06/2010 02:19

---

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=scp>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).



*Saint Catherines Press, The University of Chicago Press, The History of Science Society* are collaborating with JSTOR to digitize, preserve and extend access to *Osiris*.

# Wallace in the Field

*Jane R. Camerini\**

ALFRED RUSSEL WALLACE'S collecting venture in the Malay Archipelago was the central and controlling incident of his life.<sup>1</sup> The specimens he collected, mostly birds, insects, and butterflies, not only brought him financial rewards and renown as a collector, but had an enduring impact on the scientific understanding of the natural history of the East, and of evolutionary processes worldwide. Yet he started out as a middle-class amateur, funding his own way through specimen sales. Fieldwork functioned as a transformational process, a critical "passage" that permitted him to become a knowledge-maker in natural science. How did Wallace manage this transformation?

Fieldwork presented new opportunities in nineteenth-century Britain, with its peculiarly English blend of enlightenment, romantic, and natural theological values, and with the industrial and territorial expansion of the Empire. To understand how individuals used these opportunities, we need to look at fieldwork as a complex practical activity. In particular, a very few trusting relationships, in conjunction with Wallace's status as a European in colonial society in the East Indies, were crucial to his identity and success as a naturalist. These relationships, the feelings and activities that comprise them, are the units of analysis in this study of fieldwork.<sup>2</sup>

Wallace has long occupied a quirky position in the history of science. He is mostly known for being the "other man" who formulated the theory of evolution by natural

\* 36 Bagley Court, Madison, Wisconsin 53705.

This paper grew out of conversations with people from the Science Studies Program and the Department of Sociology at the University of California at San Diego, especially Babette Convert, Linda Derksen, Alan Richardson, Martin Rudwick, Steven Shapin, and Bob Westman, to each of whom I extend my thanks. I am also very grateful to Tom Broman, Hal Cook, Elihu Gerson, Hugh Iltis, Rob Kohler, Henrika Kuklick, Anne Larsen, Lynn Nyhart, and Anne Secord for their comments and encouragement at various stages in this project.

<sup>1</sup> Alfred Russel Wallace, *My Life: A Record of Events and Opinions*, 2 vols. (New York: Dodd, Mead & Co., 1905), Vol. I, p. 336. For full citations to primary and secondary sources on Wallace, see Charles H. Smith, ed., *Alfred Russel Wallace: An Anthology of His Shorter Writings* (Oxford: Oxford Univ. Press, 1991). In addition to the standard published sources for Wallace's life and travels, I have used new transcripts of Wallace's original Malay journal and his field notebooks; originals are housed at the Linnean Society Archives in London. The journals and one of the notebooks (known as the "Species Notebook") were transcribed and made available to me by Michael Pearson, to whom I am very grateful. The other notebooks, the "Field Journals," were microfilmed and made available to me thanks to Gina Douglas of the Linnean Society Archives.

<sup>2</sup> The tension in this essay between individualism and collectivism visits a familiar theme; see Martin J. S. Rudwick, "Charles Darwin in London: The Integration of Public and Private Science," *Isis*, 1982, 73:186–206; Charles Rosenberg, "Woods or Trees? Ideas and Actors in the History of Science," *Isis*, 1988, 79:565–570; Steven Shapin, "Discipline and Bounding: The History and Sociology of Science as Seen Through the Externalism-Internalism Debate," *History of Science*, 1992, 30:333–369; *idem*, "Personal Development and Intellectual Biography: The Case of Robert Boyle (Essay Review)," *British Journal for the History of Science*, 1993, 26:335–345.

selection, and as the inscriber of “Wallace’s line.” But he is difficult to label, for he was not a gentleman naturalist, colonial radical, high Victorian, or artisan. Wallace seems to elude all traditional categories, except perhaps “intellectual.” For all the honors, degrees, and medals awarded him, he remained a self-styled polymath, indomitable and independent in his views, an enigma to his peers and biographers—in short, an eccentric.<sup>3</sup> Why choose Wallace, then, to write about fieldwork? Is he not an atypical subject, unlikely to shed light on the general theme of fieldwork or on Victorian natural history? Varied personal relationships may have been especially essential for Wallace, because of his relatively low social standing and minimal institutional support, but social interactions with local peoples and Europeans settled abroad were necessary for anyone working in the field. This was as true for Humboldt, Darwin, Hooker, and Huxley as for Wallace, although one would expect some interesting differences in how each of their social networks extended to foreign lands.<sup>4</sup> Wallace’s eccentric career illuminates central themes in the history of fieldwork.

The emphasis on the human links that connected Wallace to a variety of social worlds draws upon a rich literature on the communal nature of scientific work.<sup>5</sup> The assumption here, culled from the sociology of work, is that a career is a process inextricable from interactions. This essay examines three relationships that were essential to Wallace’s work in the field. Two were with single individuals: his Malayan servant, Ali, and his agent in London, Samuel Stevens. The third is a set of interactions with Europeans in the colonized regions in the East, which together provided a network of connections that made his fieldwork possible.

This is not a “professionalization” story—my goal is to reverse the standard figure-ground relationship between the product and process in the history of science. Traditionally, starting with a finding we consider important, such as Wallace’s evolu-

<sup>3</sup> Frank Turner deftly describes the exceptional brand of moral humanism that framed Wallace’s intellect, attributing it to his social and intellectual isolation. I disagree that isolation (solitude) was a cause of Wallace’s idiosyncrasies, but I think Turner correctly points to Wallace’s character to explain his enigmatic position. Wallace continues to elude full biographical treatment. Frank Miller Turner, *Between Science and Religion: The Reaction to Scientific Naturalism in Late Victorian England* (New Haven and London: Yale Univ. Press, 1974); see Smith (cit. n. 1) for major Wallace references.

<sup>4</sup> See Jane Camerini, “Remains of the Day: Early Victorians in the Field,” in *Victorian Science in Context*, ed. Bernard Lightman (Chicago: Univ. Chicago Press, forthcoming 1997).

<sup>5</sup> The list of sources in the history and sociology of science that deal with networks and the social worlds of science is large indeed, and I cite only those that have directly influenced my thinking. From the sociological literature: Howard Becker’s “Notes on the Concept of Commitment,” *American Journal of Sociology*, 1960, 66:32–40; Elihu M. Gerson “On ‘Quality of Life,’” *American Sociological Review*, 1976, 41:793–806; Susan L. Star and James R. Griesemer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39,” *Social Studies of Science*, 1989, 19:387–420. My understanding of a practice-based approach to scientific work owes much to my reading of Howard Becker, *Art Worlds* (Berkeley: Univ. California Press, 1982); Bruno Latour, *Science in Action* (Cambridge, Mass.: Harvard Univ. Press, 1987); and to the introductory essays in Susan L. Star, *Regions of the Mind: Brain Research and the Quest for Scientific Certainty* (Stanford: Stanford Univ. Press, 1989) and Adele E. Clarke and Joan H. Fujimura, eds., *The Right Tools for the Job* (Princeton: Princeton Univ. Press, 1992). Sources from the historical literature include David E. Allen, *The Naturalist in Britain: A Social History* (Penguin Books, 1976; 2nd ed., Princeton: Princeton Univ. Press, 1994); Paul Farber, *The Emergence of Ornithology as a Scientific Discipline* (Dordrecht: D. Reidel, 1982); James R. Griesemer and Elihu M. Gerson, “Collaboration in the Museum of Vertebrate Zoology,” *Journal of the History of Biology*, 1993, 26:185–203; and Anne L. Larsen, “Not Since Noah: The English Scientific Zoologists and the Craft of Collecting, 1800–1840” (Ph.D. diss., Princeton Univ., 1993).

tion articles or his biogeographical line, we turn to the fieldwork to account for the science. This essay views fieldwork as the object to be understood, leaving the scientific products largely, but not entirely, unexamined. This essay focuses instead on the collective nature of fieldwork. It highlights the enabling role of European society in the East and the constitutive knowledge-making role of Ali and Stevens in Wallace's scientific work. In the portion of Wallace's network outlined here, we shall see that affects such as trust and respect played a pervasive yet variable role in the interactions that comprised fieldwork.<sup>6</sup>

The introductory section describes Wallace's decision to become a collector, summarizing his first collecting venture to Brazil and the period he spent in London before his journey to the East Indies. I then examine Wallace's interactions with Europeans and local rulers during his eight years in the Malay Archipelago, and his relationships with assistants and servants, most importantly his servant Ali. Interactions with his servants and other local peoples are analyzed further in tracing Wallace's search for birds of paradise, which necessitated collecting in regions not inhabited by Europeans.<sup>7</sup> The final section describes how his relationship with his agent Samuel Stevens linked Wallace to the social worlds of collectors and scientific naturalists in London. The products of Wallace's journey to the East Indies—the specimens he collected, the scientific papers he wrote, and the mastery he achieved as a collector, writer, and naturalist—are shown here to be inextricable from the human relationships of his fieldwork.

#### “RATHER A WILD SCHEME”?

Wallace's career as a naturalist formally began with his first major field trip to collect specimens in Brazil in 1848 with his friend Henry Walter Bates. This brief overview of the four-year Amazonian journey and the following year in London summarizes the relationships through which Wallace gradually become more committed, skilled, and socially connected as a naturalist and collector.

Natural history was enormously popular in Britain in the 1840s. Collecting was not a well-established profession like medicine or the clergy, but it was a cultural tradition with its own rich history stretching back well into the sixteenth century.<sup>8</sup> Natural history was a thriving set of practices that formed complex networks

<sup>6</sup> Steven Shapin, *A Social History of Truth: Civility and Science in Seventeenth Century England* (Chicago: Univ. Chicago Press, 1994) extensively develops many of the themes touched on here in a larger, albeit different, context.

<sup>7</sup> I categorize Wallace's interactions by the types of people he interacted with rather than by types of interactions. The broad categories of servants, gentlemen, rajahs, and local peoples are based on my reading of Wallace's journal. He wrote about people in characteristic ways, referring to Europeans, for example, as “Mr.” or “my friend,” servants as “my boy” or “my men,” and local peoples as natives, by race, or as “inhabitants.”

<sup>8</sup> Few of the practices of natural history belonged to remunerative professions, as noted by Allen, *Naturalist in Britain* (cit. n. 5) and David Knight, *The Age of Science* (Oxford: Blackwell, 1986). Financial incentives for collecting specimens have existed since the Renaissance, although documentation remains scattered among historical and scientific sources. Wealthy private collectors engaged professionals to procure specimens at least as far back as the early seventeenth century. One of the few works that deals with the early history of collecting is Paula Findlen, *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* (Berkeley: Univ. California Press, 1994); see also Kenneth Lemmon, *The Golden Age of Plant Hunters* (South Brunswick, N.Y.: Barnes, 1969) and Tyler Whittle, *The Plant Hunters* (Philadelphia: Chilton Book Co., 1970); and the

throughout society, from pub culture and local mechanics institutes to fashion and home decorating, from the habits of the clergy to the cabinets of the wealthy, from popular literature to the proceedings of new scientific societies. In Victorian Britain, natural history was a passion for collecting and describing natural objects and delighting in their uniqueness, a passion that pervaded the culture more extensively than it had in previous eras.<sup>9</sup>

From the age of fourteen, Wallace apprenticed in his brother's land-surveying business for seven years. As business was erratic, Wallace found other work as a builder, watchmaker, and teacher. However, after his brother died, he realized he had no vocation for teaching and a strong dislike for the financial end of managing a surveying business.<sup>10</sup> During these years he became an ardent naturalist in his spare time. In the context of Britain in the 1840s, Wallace was like thousands of other working-class, amateur naturalists both in his fascination with natural objects and in that constraints of time and money curtailed its pursuit. His delight in natural history was stoked by a friendship with Henry Walter Bates, whom he met in 1845. The two men corresponded for the next couple of years, discussing insect collecting and natural history books. Wallace's letters to Bates have provided historians (and Wallace himself in his autobiography) with an account of his early exploits of natural history and a list of authors that nourished his growing interest, most notably Humboldt, Pritchard, Lyell, Swainson, and Darwin.<sup>11</sup>

Picture two young men armed with collecting nets and boxes, guns, camping equipment, various instruments (lenses, compasses, thermometers, barometers, and sextant), and practically no money, taking off for the Amazon to support themselves by selling fancy insects to British collectors. That they were embarking on a risky venture seems clear. Wallace wrote that had he not had the financial necessity to make a living, he would not have embarked on "what at that time seemed rather a wild scheme." This choice was fueled not simply by necessity, but primarily by a true love for the objects of his affection.<sup>12</sup>

Wallace attributed his and Bates's choice to go to Brazil to their reading, late in 1847 or very early 1848, William Henry Edwards's *A Voyage up the Amazon* (1847). Wallace noted that, in addition to the standard inspiration of the grandeur of tropical vegetation, their decision was influenced by Edwards's account of the hospitality of

literature on Sir Joseph Banks in David Allen, "Banks in Full Flower (Essay Review)," *Notes and Records of the Royal Society of London*, 1990, 44:119–124; and in David P. Miller, "Joseph Banks, Empire and 'Centers of Calculation' in Late Hanoverian London," in *Visions of Empire: Voyages, Botany and Representations of Nature*, eds. D. P. Miller and P. Reill (Cambridge: Cambridge Univ. Press, forthcoming).

<sup>9</sup> Lynn Barber, *The Heyday of Natural History* (London: Jonathan Cape, 1980); Lynn Merrill, *The Romance of Natural History* (Oxford: Oxford Univ. Press, 1989); Anne Secord, "Science in the Pub: Artisan Botanists in Early Nineteenth Century Lancashire," *Hist. Sci.* 1994, 32:269–315.

<sup>10</sup> Wallace, *My Life* (cit. n. 1), Vol. I, p. 242; Wilma George, *Biologist Philosopher: A Study of the Life and Writings of Alfred Russel Wallace* (London: Abelard-Schuman, 1964), pp. 10–11, wrote that Wallace had saved money from the Neath railway project, giving him a chance to change profession. For a more detailed treatment of his work as a surveyor, see James Moore, "Wallace's Malthusian Moment: The Common Context Revisited," in *Victorian Science* (cit. n. 4).

<sup>11</sup> Wallace, *My Life* (cit. n. 1), Vol. I, pp. 232, 254–256, 354.

<sup>12</sup> Wallace, *My Life* (cit. n. 1), Vol. I, p. 196. Two of Wallace's biographers claimed that Wallace and Bates were two of the earliest professional collectors, a highly questionable claim (see n. 8). George, *Biologist Philosopher* (cit. n. 10), p. 13, and Martin Fichman, *Alfred Russel Wallace* (Boston: Twayne, 1981), citing George, p. 19.

local people and the moderate expenses of living and traveling in Brazil.<sup>13</sup> They sought advice from Mr. Edward Doubleday, entomologist at the British Museum, from whom they received much encouragement. Doubleday assured them that because of the extensive London trade in exotic insects, shells, and birds, they could make enough money to pay their way by collecting animals. Bates and Wallace studied the collections at the British Museum, purchased books, equipment, and “outfit,” and made arrangements with an agent for sale of their collection. In addition to planning for the material needs of collecting, Wallace practiced shooting and skinning birds before leaving England. Bates and Wallace tapped into an existing set of resources—the practical skills needed for collecting, the knowledge base for identifying what to collect, and the critical link through an agent to collectors of natural objects, whose money made their trip possible. They participated in the culture of collecting—the networks of correspondence, publishing, specimen trading, and equipment manufacture—that made their venture financially possible.

Informed by two travelers who had collected in Brazil and armed with letters of introduction from Edwards (whom they had the good fortune to meet) and from the sailing company, the two young men sailed to America in April 1848. Grappling with the practical demands of collecting in Brazil, Wallace developed skills he would later build on in the Malay Archipelago. Many of these skills—using letters of introduction to find lodgings and collecting sites, facing the material and social obstacles to locating, collecting, and transporting specimens back to England, and overcoming the practical exigencies of surviving in dangerous and isolated places—indicate the importance of handling the complex human infrastructure entailed in carrying out fieldwork.<sup>14</sup>

Except for one shipment of specimens sent to London early in his journey, most of Wallace’s collection was not dispatched as he requested; it was held up by Brazilian Custom’s House officials, probably due to inadequate bribes. When he sailed for home in 1852, he had with him three years’ worth of collecting remains, including plant and animal specimens and live animals for sale, hundreds of insect and bird specimens meant for his private collection, and practically all of his notes, sketches, and journals. All was lost in a fire that destroyed the ship, except what he carried in his arms. Eventually a slow ship bound for London rescued him and the crew.

During the approximately fifteen months between his return from the Amazon and his journey to the Malay Archipelago, Wallace participated in the London world of scientific natural history. He published two books based on his travels and researches, both of which were received only moderately well, and he published several articles.<sup>15</sup> His contacts with other naturalists and his scientific knowledge

<sup>13</sup> Wallace, *My Life* (cit. n. 1), Vol. I, p. 264–266; the importance of modest expenses was noted by George, *Biologist Philosopher* (cit. n. 10), p. 10; Larsen, “Not Since Noah” (cit. n. 5), discusses in some detail the instruction manuals available in England, both for local collecting and for collecting abroad, especially chaps. 4 and 5. No evidence exists that Wallace used such manuals.

<sup>14</sup> The early modern roots of letter writing as a formalized system of introduction are discussed in Findlen, *Possessing Nature* (cit. n. 8), p. 132–136.

<sup>15</sup> *Palm Trees of the Amazon* (London, 1853), reviewed by W. J. Hooker in *Hooker’s Journal of Botany*, 1854, 6:62; 250 copies of *Palm Trees* were printed, the sale of which just covered all expenses; *A Narrative of Travels on the Amazon and Rio Negro* was published by Reeve; 750 copies were printed, and when Wallace returned from the East, 250 copies were still unsold, and there were no profits to divide. They agreed to share the remaining copies, and Wallace’s portion, disposed by his new publisher, Macmillan, brought in a few pounds (*My Life* [cit. n. 1], Vol. I, p. 322). In addition

expanded as he studied the collections at the British Museum, the Linnean Society, and the Royal Botanical Garden and Herbarium at Kew and regularly attended meetings of the Zoological and Entomological Societies.

In spite of the loss of the major part of his Brazilian collection, Wallace made the best use he could of the specimens, drawings, and journals he managed to bring back. He contributed to a serious, prestigious, but fairly small arena of scientific natural history, London style. His presentation of one paper in particular, on the geography of the Rio Negro, got the attention of key figures in the professional network. On each of his four journeys on the Rio Negro, Wallace had made careful measurements, using a prismatic compass, a watch, and a sextant to estimate his rate of travel and latitude. From these observations, and longitudes estimated by others, Wallace drew a map that he presented to the Royal Geographical Society. It met with substantial approval, for when he subsequently approached the president of the Society, Sir Roderick Murchison, Wallace found a kind and influential supporter. Murchison arranged for Wallace's free passage on the next government ship to the East Indian Archipelago, the region Wallace had chosen as his next destination.<sup>16</sup>

His senses already tuned in Brazil to the practical realities of the life of a European collector in tropical regions, his choice of the Malay Archipelago was made with advice and information sifted from professional contacts. The Dutch settlements in the Celebes and Moluccas offered some reassurance that he would find facilities for travel, and the recent success of Sir James Brooke in establishing himself as ruler of Sarawak was an additional incentive. These factors led him to believe that not only would the rare animals from the region be of commercial value and scientific interest, but that the physical, political, and practical conditions he was likely to meet would be manageable. His study in London of the small but inviting insect and bird collections from the Far East assured him that the Malay Archipelago was well worth a naturalist's visit. He took on a major challenge, but one in which risks and gains were calculated. Wallace departed for the East Indies in 1854 with four years of tropical field experience behind him, his travel financed through professional contacts. He was backed by a solid agent, accompanied by a young assistant, and well armed with books and supplies.<sup>17</sup>

---

to the extracts from letters to Stevens which were published in the *Annals and Magazine of Natural History*, vols. 3, 5, 6, and 8, Wallace published six short articles: "On the Monkeys of the Amazon," *Proceedings of the Zoological Society of London*, 1852, 20:107-110; "Some Remarks on the Habits of the Hesperidae," *Zoologist*, 1853, 11:3884-3885; "On the Insects Used for Food by the Indians of the Amazon," *Transactions of the Entomological Society of London*, 1854, 2(pt. VIII):241-244; "On the Rio Negro," *Journal of the Royal Geographical Society*, 1853, 23:212-217; "On Some Fishes Allied to *Gymnotus*," *Proc. Zool. Soc. Lond.*, 1853, 21:75-76; and "On the Habits of the Butterflies of the Amazon Valley," *Trans. Entomol. Soc. Lond.*, 1854, 2(pt. VIII):253-264. Full citations for the letter extracts and these articles are found in the Smith anthology (cit. n. 1).

<sup>16</sup> Wallace, *My Life* (cit. n. 1), Vol. I, p. 316; *idem*, "On the Rio Negro" (cit. n. 15) includes a foldout map lithographed from the larger original, which is housed at the Royal Geographical Society in London.

<sup>17</sup> Among the books Wallace carried with him were *Conspectus Generum Avium* of Prince Lucien Bonaparte and a volume by Boisduval describing all the known species of two families of butterflies, the Papilionidae and Pieridae. Of Bonaparte, Wallace wrote: "No one who is not a naturalist and collector can imagine the value of this book to me. It was my constant companion on all of my journeys, and as I had also noted in it the species not in the British Museum, I was able every evening to satisfy myself whether among my day's captures there was anything either new or rare." *My Life* (cit. n. 1), Vol. I, p. 328.

## AMONG GENTLEMEN

The European society through which Wallace lived and traveled in the East was the labyrinthine creation of European colonialism, especially the intersecting paths of English trade from India to China and the Dutch settlements in Java, Borneo, and the Moluccas. These routes overlay 2,000 years of spice-trading practices that evolved before the arrival of Europeans in the region. The steamships that brought Wallace to the Archipelago carried not only his mail and specimens to and fro, but also lead shot for his guns, fabric for his clothes, boxes to carry animals, and medicines for his illnesses. He used the roads and buildings that enabled colonial agriculturalists, miners, and engineers to tap the resources of these islands. The doctors, missionaries, traders, teachers, and merchants who built lives within the new mixed cultures served Wallace as critical points of departure for his collecting. It was through their good offices that he found lodgings, directions to places for collecting, servants, translators, introductions to local rulers, and letters of introduction to other Europeans.

Wallace found nearly all of the 70 or more houses he inhabited during eight years of fieldwork through these interactions, which to a large extent determined the locations of his daily collecting sites. Geographically and practically, established European society formed the lattice of this journey. The bits of the lattice were pieced together by a brother-in-law here, a letter of introduction there, a Dane showing him a path, a German giving him a meal, a Brit lending him a servant, or land, or materials to help build a temporary abode, and a Dutchman introducing him to a rajah. The following typical excerpts, in Wallace's own words, show how he traveled through this cultural lattice:

I rode over to see Mr. S who lives 7 mi[les] farther down the bay. I was accompanied by a Dutch gentleman residing at Ampanam who kindly offered to be my guide. . . . Mr. S received us kindly & offered me a residence at his house should I think the neighborhood favourable to my researches. (June 1856, upon arrival in Lombock)

Finding much difficulty in getting accommodation where I wished (at a forest in the territory of the Rajah of Goa) determined to try a locality about 30 miles North of Macassar where a brother of my friend Mr. M resided & had kindly offered to find me house room & give me assistance. (July 1857, Celebes)

I went to the Sadong river, where coal mines were being opened by an English mining engineer, Mr. Coulson, a Yorkshireman, and I stayed there nearly nine months.<sup>18</sup> (March 1856, Borneo)

The first two of these excerpts indicate the importance of hospitality in colonial culture. The words "kind" and "friend" appear frequently in Wallace's journal, and colonial residents often offered far more than an evening of company with a fellow European. Mr. Mesman, for example, lent Wallace a house, on more than one occasion lent Wallace horses for his excursions, helped him find servants, personally introduced Wallace to the local rajah, and sent him to stay with his brother in an area more promising for collecting. Mesman took Wallace through the countryside

<sup>18</sup> Wallace, *Ms. Journal* (cit. n. 1), p. 5 (June 1856, upon arrival in Lombock); *Ms. Journal*, p. 107 (July 1857, Celebes); Wallace, *My Life* (cit. n. 1), Vol. I, p. 341 (March 1856, Borneo), predates extant *Ms. Journal*.



he knew from deer hunting, and although Mesman did not realize its promise, Wallace found the locale rich in rare and endemic birds and insects. Wallace arrived at this island, Celebes, with two letters of introduction, one to Mesman, another to a Danish shopkeeper; from these starting points he was able to procure the labor and local knowledge that made collecting a reality.<sup>19</sup>

The third excerpt reflects another aspect of Wallace's interactions with colonial entrepreneurs, one that demonstrates how the colonial enterprise substantially influenced Wallace's collecting. It isn't hard to surmise something about the presence of a British mining engineer in Borneo in 1856. The islands of the Malay provided opportunities for personal advancement for English professionals through development and exploitation of local resources, both mineral and human. The British had occupied parts of Borneo for a century, and in the 1840s Sir James Brooke, a private adventurer, secured both local and British support for his rule of Sarawak, the northwestern portion of the island. After having been a guest of Sir James Brooke, Wallace made the two-day journey south from Sarawak to the Sadong River, probably with an introduction from Brooke to his countryman, Mr. Coulson. Coulson's coal works was a settlement of nearly a hundred men, mostly Chinese, situated on a hillside in forest-covered swamp, with only a locally built road of tree trunks; nearby were native Dyak settlements. The settlement gave Wallace a location and a source of contact with a "gentleman" whose help might be called upon to find a place to stay, to procure servants, for future contacts, and to share in his privileged status vis-à-vis the rule of Brooke. Wallace was "kindly accommodated" in Mr. Coulson's house, and finding the area promising for collecting, he had a small house built for him with local labor. He remained nine months, amassing an immense collection of insects in addition to studying and collecting orangutans. The enormous richness in insects at this site was due not only to sunny conditions following the rains; it was enhanced by the conditions produced by the coal works—newly cleared land adjacent to a large tract of virgin forest and a great quantity of cut, decaying trees.<sup>20</sup> The infrastructure of resource exploitation became the infrastructure of natural history collecting.

Wallace also benefited from the social fluidity of colonial society. The class distinctions among men of various professions—merchants, clergy, government, industry, and medicine—were altered in the transfer of European society to the colonies. In a context in which the boundary between European and Other was enhanced, the boundaries between the middle and upper classes were more blurred and forgiving. Wallace was able, like many a colonial fortune seeker, to move far more readily through social boundaries in this dislocated European society than he would have been had he remained in Britain. The quality of these interactions—the domestic openness, the extending of favors, guidance, and privilege, the intellectual exchanges—suggests that the status of "gentleman" was conferred according to local,

<sup>19</sup> Mr. Mesman is described in Wallace's Ms. Journal (cit. n. 1), pp. 33, 36, 44.

<sup>20</sup> This portion of Wallace's trip in early 1855 predates the period recorded in his extant Ms. Journal. The information here is from Wallace, *My Life* (cit. n. 1), Vol. I, pp. 341–343, and Alfred Russel Wallace, *The Malay Archipelago: The Land of the Orang-Utan and the Bird of Paradise* (London: Macmillan, 1869 [pages references herein are to 6th ed., 1877]), pp. 34–38; Nicholas Tarling, *A Concise History of Southeast Asia* (New York: Praeger, 1966), pp. 126–130; W. Williams and Joginder Singh Jessy, *A Short History of South East Asia* (Penang, Indonesia: Peninsular Pubs., 1963, 1967).

colonial conventions. Many such gentleman colonials, especially doctors, welcomed the company of a man of science.<sup>21</sup> In this transposed class of gentlemen, Wallace was set free to perform his job. Each favor granted him by a European constituted a piece of his fieldwork. In effect, Europe in the Malay Archipelago functioned as an institution, validating and assisting his work. Colonial trade and industrial development provided resources that made it possible for him to send the fruits of his labors in the field, the animal specimens and scientific articles, back to England.

Wallace's relations with other Europeans in the East varied, of course, in intensity and importance. Some of these interactions became friendships, some were brief exchanges of gentlemanly company in which local natural history was a shared topic of interest. But taken together, they provided a framework of connections that enabled him to travel and collect through the region. These activities required the cooperation of local peoples, both rulers and ordinary inhabitants, and were often mediated by Europeans.

We find an example of the complexity of such mediation by looking again at Wallace's arrival in Macassar on the island of Celebes in 1856, during the second year of his journey. Wallace presented letters of introduction to two English-speaking individuals, the Dutchman, Mr. Mesman, and a Danish shopkeeper. The merchant introduced him to the local governor, while Mr. Mesman provided Wallace with a bamboo house near his coffee plantation in the country. He soon found that for productive insect collecting, he had to go further into the country, for which he needed the permission of the rajah of Goa. He asked the governor of the town for a letter to the rajah requesting protection and permission. Mr. Mesman, a great friend of the rajah, lent Wallace a horse and accompanied him on a visit to the rajah. After much ceremony, involving a messenger squatting at the rajah's feet and presenting the letter, sewn up in a covering of yellow silk, and a discussion translated by Mr. Mesman, permission was granted. However, Wallace was required to give notice to the rajah before going anywhere, to ensure his safety.<sup>22</sup>

What did the rajah's permission and promise of protection mean? Dangers in the Malay were real: in the competition among local inhabitants of various races living under both local and colonial rule, personal violence and thievery were not uncommon. Word of a foreign visitor passed quickly from village to village, servant to servant, merchant to employees, bandit to pirate. Official sanction was needed for Wallace to have the cooperation of local people, both natives and Europeans; it was not only expeditious but necessary for his safety.

This summary of just one of Wallace's interactions with a rajah allows us to draw out several characteristics of this type of negotiation. Wallace did not present himself to a local ruler without some sort of introduction from a European member of the local community; in this case, his friendship with Mr. Mesman was crucial. A translator was required; early on, Wallace's command of the Malay language was not sufficient, and at other times other languages were involved. In these circumstances, gifts and politeness were the rule, and assent often forthcoming, but Wallace often had to go through several rounds of lengthy visits. Even when a rajah promised him an

<sup>21</sup> W. F. Wertheim, *Effects of Western Civilization on Indonesian Society*, Secretariat Paper No. 11 (New York: Institute of Pacific Relations, 1950); Jean G. Taylor, *The Social World of Batavia: European and Eurasian in Dutch Asia* (Madison: Univ. Wisconsin Press, 1983).

<sup>22</sup> Wallace, *Malay Archipelago* (cit. n. 20), pp. 213–214; *idem*, Ms. Journal, pp. 33, 36.

audience, housing, and protection, delays caused by uncomprehending or uncooperative residents were common.

Wallace had rather restricted communication with the various native peoples among whom he lived, but they were nearly always part of his daily activities, and observations and ideas about them make up a substantial portion of his published and unpublished narratives. Typically, Wallace's interactions with local inhabitants took the form of barter of some kind—money, cotton, or alcoholic beverages were exchanged for a house, shells, insects, or guides through local territory. These exchanges were often complex, noisy, and repetitious; often people were terrified by Wallace, and occasionally they were amused.<sup>23</sup> These reactions underscore an important point—most local people did not trust him. This, in turn, enhanced the importance of his relationships with locally settled Europeans and with his servants.

#### TROUBLE WITH THE HELP

We have seen that when Wallace worked in the islands of the Malay Archipelago inhabited by European colonial settlers, he depended on them to help negotiate a range of concrete tasks that made his collecting activities possible. But his dependence did not end with protection, housing, and access to a collecting site. He also needed help in carrying out the specific activities of collecting: locating and procuring animals and processing specimens for on-site description and transport back to England. In addition, he required the labor of others to carry his specimens and belongings, build temporary abodes, communicate with other local people, and procure food and other supplies, along with further assistance in times of illness, which were frequent. Here I describe Wallace's difficulties with his first English assistant and with local servants, and introduce Ali, a Malay lad who became Wallace's personal servant and factotum. His interactions with assistants alert us to the importance, indeed the necessity, of finding good help to carry out the work of field collecting.

Wallace came to the East accompanied by a sixteen-year-old young man named Charles Allen, who had done some work for Wallace's sister. Allen did not work out particularly well. He stayed with Wallace for only a year and a half, and although he learned to shoot birds and catch insects, his skill and interest did not extend to other tasks involved in preparing specimens—killing, pinning, skinning, and arranging. When Allen left Wallace's employ, it was a relief to Wallace to be without him. Toward the end of Wallace's eight-year stay in the region, Allen worked for him again, traveling on his own, collecting and buying specimens. From the little Wallace wrote about him, it seems that Allen was neither a keen or committed collector nor a good match as a companion for Wallace. It is clear from letters to his mother and sister that Wallace found Allen a frustrating and careless employee. After a year and a half, Allen had begun to learn some of the skills of collecting, but his overall lack of initiative and talent nearly drove Wallace mad. When Wallace wrote to his

<sup>23</sup> From Wallace's Ms. Journal (cit. n. 1), pp. 39, 54. "One of the most disagreeable features of travelling or residing in this country is the excessive terror I invariably excite. Wherever I go dogs bark, children scream, women run & men stare with astonishment as though I were some strange & terrible cannibal monster. . . . One day when in the forest an old man stopped to look at me catching an insect. He stood very quiet till I had captured pinned and put it in my collecting box when he could contain himself no longer, but bent himself almost double & enjoyed a hearty roar of laughter."

sister about another potential assistant, he asked if he could draw, speak French, write a good hand, or make anything, noting that Charles could not. In Wallace's autobiographical account of Charles Allen, no praise appears for the young man. Wallace noted that Allen was rather of a religious turn, and as conventional religion held no sway with Wallace, this comment suggests a lack of personal engagement in their interaction.<sup>24</sup>

Wallace spent a good deal of time searching for servants, who would abandon their employer quite readily. They were often unreliable, lazy, unwilling to travel, sick, or frightened away by violent events or rumors of danger of one kind or another. Some gambled and drank away their wages before earning them, some simply ran away. He needed help to carry his supplies while traveling, to cook, to guard his belongings when he was out collecting, to carry nets and vials in the field, and sometimes to build temporary living quarters. He employed dozens of natives from the various islands, among them the bird stuffer named Fernandez, two Portuguese servants, a little rascal called Baso, and a boy called Baderoon. Wallace described Baderoon as a pretty good boy, but a gambler. When given four months wages in advance to buy a house for his mother, Baderoon showed up penniless in less than two days, having gambled away his unearned money.<sup>25</sup> When Wallace wrote that each of his sixty or seventy separate journeys within the Archipelago involved some preparation and loss of time, we see that a large part of that time was owing to trouble with the help.<sup>26</sup>

In Ali, a Malay servant he employed in 1855, Wallace found a willing and able assistant. In presenting Ali's photograph in his autobiography, Wallace described him as the faithful companion of nearly all of his journeys in the East, and the best native servant he ever had (Figure 1). Wallace had nothing but praise and gratitude for the young Malay; the quality of his travels in the East, his scientific collections, and probably his writings would have been significantly different had he not had a loyal servant who skillfully adapted himself to his master's needs. Most of the time that Wallace spent in the Malay, trekking and sailing from place to place, he was a "we."

And in a way, they remained a familial "we." In 1907, the then 23-year-old Harvard zoologist Thomas Barbour traveled to the Dutch East Indies with his wife. When they reached the island of Ternate, they had an unexpected encounter:

Here came a real thrill, for I was stopped in the street one day as my wife and I were preparing to climb up to the Crater Lake. With us were Ah Woo with his butterfly net, Indit and Bandoung, our well-trained Javanese collectors, with shotguns, cloth bags, and a vasculum for carrying the birds. We were stopped by a wizened old Malay man. I can see him now, with a faded bluefez on his head. He said, "I am Ali Wallace." I knew at once that there stood before me Wallace's faithful companion of many years, the boy who not only helped him collect but nursed him when he was sick. We took his photograph and sent it to Wallace when we got home. He wrote me a delightful letter acknowledging it and reminiscing over the time when Ali had saved his life, nursing

<sup>24</sup> In a letter to his sister dated 25 June 1855, Wallace asked her for more information about a prospective field assistant, saying "so is Charles a very nice boy, but I could not be troubled with another like him for any consideration whatever." The letter describes Charles's weaknesses and Wallace's frustration with him. Other comments are found in a subsequent letter to his sister, both in James Marchant, *Alfred Russel Wallace: Letters and Reminiscences* (New York: Harper, 1916) pp. 46–49; Wallace, *My Life* (cit. n. 1), Vol. I, p. 340.

<sup>25</sup> Wallace, *Malay Archipelago* (cit. n. 20), p. 407.

<sup>26</sup> Wallace, Ms. Journal (cit. n. 1), pp. 29, 34.



*Figure 1. Ali Wallace. "He [Ali] here, for the first time, adopted European clothes, which did not suit him nearly so well as his native dress, and thus clad a friend took a very good photograph of him. I therefore now present his likeness to my readers, as that of the best native servant I ever had." Quotation and picture from Alfred R. Wallace, My Life: A Record of Events and Opinions, 2 vols. (Dodd, Mead, & Co., 1905), Vol. I, pp. 382–383.*

him through a terrific attack of malaria. This letter I have managed to lose, to my eternal chagrin.<sup>27</sup>

Imagine this former servant, some 45 years after Wallace's departure from the East, seeing a young Westerner outfitted for collecting, and greeting him as he did. Identifying himself as "Ali Wallace" reflects the enduring and fundamental nature of Ali's experience of his early years working with Wallace, as well as a history of slavery and servitude in the colonial East Indies in which the line between the two was fuzzy.<sup>28</sup> It is possible that Ali might fit roughly into one of several categories of servants, that of head servant, that had become part of colonial households in Indonesia since the early seventeenth century. The line between head servant and family member is another loose boundary. In any case, the relationship between Ali and Wallace was pivotal for each of them, growing in the course of seven years of finely tuning their lives and work together.

Ali was Wallace's head man, accompanying him on his daily collecting trips; together they walked, netted insects and shot birds, sat and ate in the field, and coordinated their evening chores and meals. When other servants were around, Ali was in charge of training them. Although Wallace had the companionship of Ali and usually

<sup>27</sup> Thomas Barbour, *Naturalist at Large* (London: The Scientific Book Club, 1950), p. 36.

<sup>28</sup> Taylor, *Social World of Batavia* (cit. n. 21), pp. 17–19, 69–71; Susan Abeyasekere, *Jakarta: A History* (Oxford: Oxford Univ. Press, 1987, rev. ed. 1989), p. 58.

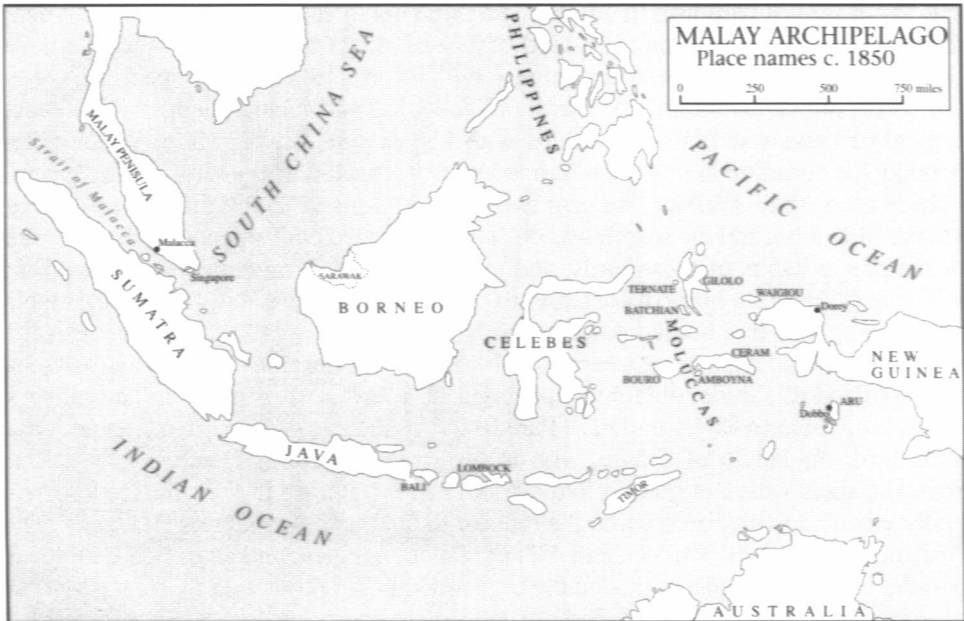
one or more other servants, it was Ali who became skilled at the material practices of collecting, whose calm boatsmanship could be counted on, whom Wallace remembered as having saved his life, who stayed the course until the end, and Ali who took on and kept the name “Wallace.” Ali served not only as Wallace’s eyes, ears, and hands in his collecting, and not only as a faithful domestic servant; he was also a teacher in the native language and ways, and in a very real sense, a friend and companion. Wallace’s dependence on him was extraordinary. It is not surprising that when Wallace left the Malay, he left Ali a rich man, giving him a present in money, his two guns, ammunition, and a lot of stores and tools. The respect, trust, and affection shared by these two men was built through shared experiences. It extended from basic survival, through the vicissitudes of their collecting life, and into the realm of knowledge-making, as we shall see in the collection of birds of paradise.

### TRUBLE IN PARADISE

The absence of European settlement in the eastern end of the Malay Archipelago intensified Wallace’s dependence on local peoples. Ali’s role, as well as that of other servants, is nowhere more pronounced than in the journeys Wallace made in search of birds of paradise. These birds have long been considered the most beautiful birds on earth—rarely does one find resplendent verbiage so consistently applied to a natural object. They stirred strong emotions, not least among them curiosity and greed. They are spectacularly beautiful creatures, as unusual as they are exquisite and showy. René Lesson, the first European to observe birds of paradise in their native habitat, wrote that upon seeing his first birds, his inexpressible astonishment at their brilliance and grace was so great that he forgot to use his gun.<sup>29</sup> The courtship plumage of the adult males accounts for most of the extraordinary feathers and other ornaments; courtship dances and movements add to their startling appearance. The fancy plumage includes skirts, whips, capes, lacelike feathers, twisted enamel-like wires, erectile expandable fans, saber-shaped tails, patches of mirrorlike iridescent plumage, jade- and opal-colored mouths, wattles, and garishly painted areas. Some of these features were very large for the size of the bird.

Chinese and Arab merchants traded for paradise bird feathers long before Wallace came on the scene. When the Portuguese set up shop in the islands of the Malay Archipelago in the early sixteenth century, the feathers of the bird of paradise were more valuable than gold. Succeeding exploration and exploitation of the region by the Spanish, Dutch, and British added to the mythological status and high value accorded to the source of these exotic plumes. Fantastic stories to match the colorful plumes circulated in Europe for over 300 years—the birds were thought to have come directly from paradise, to live only in the lofty ether, and to be footless and even wingless. The trade in plumes rather than whole specimens accounts for the myth of footlessness and winglessness. More sober descriptions appeared as more skins arrived in Europe, distinguishing different species of paradise birds and giving fairly precise information as to their origin in the Aru Islands and New Guinea. Based on highly limited reports, Linnaeus named two species: *Paradisaea apoda*, the footless bird of paradise, and *P. regia*, the king bird of paradise. Until the observa-

<sup>29</sup> René Lesson to William Swainson, 24 April 1830, from New Guinea, letters of William Swainson, Linnean Society Archives, London.



**Figure 2.** Location of major places and contemporary place names in the Malay Archipelago, circa 1850.

tions of René Lesson in the 1820s, live birds or complete specimens had rarely been observed by Europeans, although seven kinds were believed to exist based on secondhand Dutch reports. Lesson purchased skins of eight species of paradise birds, observed live birds in their native habitat, and published extensively.<sup>30</sup> Wallace hoped to be able to procure these rare birds; he longed to be the second European to see them in nature, both for the thrill their beauty excited and to be able to add to Europeans' limited knowledge of them. He could satisfy the demands of the collecting market for colorful specimens and show he was a serious naturalist as well. He knew they would be hard to locate, but he did not know quite how difficult it would turn out to be.

Unlike other islands that Wallace visited, the home of the paradise birds was not settled by Europeans and offered little in the way of colonial amenities. The Aru Islands, the eastern Moluccas, and New Guinea were obstacles to the naturalist for good reason. Food was scarce, the coastline and terrain were rugged and inhospitable, the swamps and forests nearly impassable, and the threat of serious illness and violent danger ever-present.

Wallace made three separate trips expressly to collect paradise birds, one to the Aru Islands in 1857, the next to mainland New Guinea in 1858, and the third to Waigiou (the easternmost of the Molucca Islands) in 1860 (see Figure 2). Another journey to the island of Batchian late in 1858 saw the fortuitous discovery of a new

<sup>30</sup> Alfred R. Wallace, "Narrative in Search after Birds of Paradise," *Proc. Zool. Soc. Lond.* 1862: 153–61; *idem*, *Malay Archipelago* (cit. n. 20), pp. 549–550. Based largely on the writings of E. Stresemann, E. Thomas Gilliard concluded that until Lesson, no naturalists went to the true home of the birds of paradise, in *Birds of Paradise and Bower Birds* (London: Weidenfeld and Nicolson, 1969).

species of bird of paradise. In addition, he hired his former assistant, Charles Allen, to collect paradise birds on the island of Mysol, near New Guinea. What Wallace brought back to the European community, both information and bird specimens, was a direct result of his interactions with native Malay and Papuan peoples. The most critical of these was his relationships with his servant Ali, on whom Wallace depended for communicating with various traders, boatmen, hunters, and villagers.

In January 1857, Wallace, Ali, and two other servants sailed by prau to the trading village of Dobbo, and the search was on. They depended entirely on local knowledge of the native habits of these birds, and at times the local hunters were not willing informants. Hunting birds of paradise was an old art for the people that shared their habitat. Papuans had hunted paradise birds for centuries, trading their feathers for salt, opium, tea, sugar, and weapons. Moreover, the chiefs of the coastal villages monopolized this trade, obtaining specimens at a low cost from the inland hunters and selling them to Bugis traders.<sup>31</sup> Paradise bird feathers were paid in tribute to the local lord, the sultan of Tidore, who in turn traded them to Dutch officials. The coastal traders were not glad to find a European interfering in their business, especially when he went directly into the interior to deal with the hunters themselves. In Aru and New Guinea, Wallace and Ali negotiated, haggled, and quarreled with local people, who concealed and misled the bird collectors in protecting their own objects of commerce. Unlike in other parts of the archipelago, local hunters, traders, and rulers, as well as Dutch sailors and officials, were well-established competitors in this most promising of collecting regions. Local trade accounted for the inconsistencies Wallace found between his expectations, based on Lesson's reports, and the places where the birds actually lived. It had never occurred to Wallace that he would rarely find the birds inhabiting the places where Lesson had purchased them.<sup>32</sup>

Although Wallace immediately inquired about obtaining birds of paradise, it took four months of settling in, traveling, inquiring, and translating before he finally found his quarry. He and his men traveled to Wanumbai, a very small village near the center of the main island of Aru, and with the help of a local steersman translating the local tongue to a broken Malay, met with the inlanders who hunted the birds. They explained their technique of using bow and arrow (with the tip blunted by a wooden cup so as to not cause bleeding) and hiding before dawn in the trees frequented by the birds, as portrayed here in a plate from Wallace's narrative (Figure 3). Wallace never saw the local hunters again. Several days later one of Wallace's trained servants, Baderoon, returned with a specimen. Moved beyond words by the beauty of the catch and by the heady excitement of obtaining his first specimen, a king bird of paradise, he became melancholic. His exhilaration bemused his Aru hosts, who saw nothing special in the catch, while Wallace was deeply moved, aware that he was the second European to observe, collect, and report on birds of paradise firsthand, and the first to spend time in their habitat.<sup>33</sup> Although Wallace did not record his feelings in his journal at the time, he later wrote of the need for a fully-developed poetic faculty to express what his emotions at the time, a faculty he did not possess. He was convinced that his compatriots, in bringing civilized virtues to "enlighten" the native human culture, would inevitably disturb the balance of nature

<sup>31</sup> Wallace, "Narrative of Search" (cit. n. 30), p. 158.

<sup>32</sup> Wallace, "Narrative of Search" (cit. n. 30), pp. 159–160.

<sup>33</sup> Wallace, Ms. Journal (cit. n. 1), p. 70.





**Figure 3.** “Natives of Aru Shooting the Great Bird of Paradise.” Caption and figure from Alfred R. Wallace, *The Malay Archipelago* (London: Macmillan, 1869).

on Aru and ultimately cause the extinction of these creatures.<sup>34</sup> The melancholy did not last long, and, accompanied by his own servants, he observed both the king and the great birds of paradise flying and eating in the forest, noting their crowlike cries.

Of the many extreme difficulties he experienced in collecting paradise birds, the most painful was at this site on Aru Island. Wallace’s feet and ankles were repeatedly bitten by sand flies and mosquitoes while traveling to and around this inland village. These broke out into open ulcers that were so severe he could not walk. For most of the two months at Wanumbai he was confined to his hut or to crawling to the river (see Figure 4). Far greater than the physical pain he bore was the severe deprivation of finding himself prisoner at a site so rich in animals, most especially the birds of paradise. His consolation was the birds that Ali, Baderoon, and Baso brought to him. Even more important to him was the “knowledge of their habits which I am daily obtaining both from the accounts of my hunters & the conversation of the natives.”<sup>35</sup> Significantly, the detailed descriptions of the courting dance of the great bird of paradise and of the methods used to hunt them, which were incorporated into scientific writings, were a synthesis of Wallace’s own observations and those of his Malay servants and of the Aru inhabitants.

Encouraged by his successes in Aru and lured by traders’ assurances of traveling

<sup>34</sup> This was proof, if needed, for his belief that “all living things were *not* made for man.” *Malay Archipelago* (cit. n. 20), p. 445.

<sup>35</sup> Wallace, Ms. Journal (cit. n. 1), p. 86; *Malay Archipelago* (cit. n. 20), p. 463.



**Figure 4.** Photograph of native hut taken by a member of the Challenger expedition (1872–1876) and given to Wallace. As stated in his autobiography, Wallace was certain it was the same one in which he lived while visiting the Aru islands. From Wallace. *My Life* (cit. n. 1). Vol. I, pp. 356–357. (Note that the original caption in Wallace gives a date of 1859 for Wallace’s stay; all other available information dates his stay to 1857.)

safely and finding many other species on mainland New Guinea, Wallace arranged for a second voyage in search of paradise birds the following year. He arrived with high expectations at Dorey in 1858, the same port where Lesson had purchased skins of eight species nearly forty years earlier. He found no native bird hunters; the local inhabitants had never prepared skins of any birds of paradise, and only the common yellow species (*P. papuana*) was found in the area. Competition with Dutch sailors and uncooperative natives made for poor collecting at this site. A disappointed Wallace concluded that “a scarcity of food sometimes approaching starvation, and almost constant sickness both of myself and [my] men, on of whom died of dysentery, made me heartily glad when the schooner returned and took me away from Dorey.”<sup>36</sup>

Later that year, Wallace made a series of trips to several Moluccan islands from his base at Ternate. The island of Batchian had been strongly recommended to him, presumably as well worth a naturalist’s visit. He spent more than two rewarding months there collecting insects, birds, and butterflies. Although Wallace reported repeatedly that his men procured specimens for his collection, one case in particular makes it clear just how much his eventual status as a collector depended on Ali’s contributions:

Just as I got home I overtook Ali returning from shooting with some birds hanging from his belt. He seemed much pleased, and said, “Look here, sir, what a curious bird,” holding out what at first completely puzzled me. I saw a bird with a mass of splendid

<sup>36</sup> Wallace, “Narrative of Search” (cit. n. 30), p. 155.

green feathers on its breast, elongated into two glittering tufts; but, what I could not understand was a pair of long white feathers, which stuck straight out from each shoulder. Ali assured me that the bird stuck them out this way itself, when fluttering its wings, and that they had remained so without his touching them.<sup>37</sup>

This curious bird turned out to be a new species of bird of paradise, later named by Mr. George R. Gray of the British Museum *Semioptera wallacei*, or Wallace's standard wing. Wallace's trust in Ali's assurances that the bird appeared a certain way when alive reminds us of the mutual understanding between the two men that was essential to Wallace's scientific publications.<sup>38</sup>

The human relationships of Wallace's collecting trace the path of the paradise birds from the islands of New Guinea to scientific papers and books. Scientifically, Wallace's collection of specimens and information about birds of paradise solidly placed him in the upper ranks of Europe's respected natural historians. Altogether, Wallace collected five different species of bird of paradise; one, the *Semioptera* that Ali brought to him, was new to science. The first paper Wallace presented after his return to London was the "Narrative of Search after Birds of Paradise."<sup>39</sup> The role of servants and other natives in the collection of birds of paradise was described openly by Wallace in his published accounts. Perhaps the reason that this second-hand knowledge was accepted in Europe was both his acknowledgment of it and his on-site authority to vouch for it or verify it. The contributions of local people became invisible through the conventions in particular genres of scientific writing. It appears to have been an unremarkable part of the practice of fieldwork. We have seen, for example, how Ali brought Wallace the specimen later named *Semioptera wallacei*, and that his trust in Ali allowed him to accept as fact the bird's characteristically erectile feathers. However, Ali's role disappears in a more formal discussion of paradise birds at the end of the book, even in the same narrative of his travels in which this event is described. In the technical account, Wallace described the bird as having been discovered by himself. Both his journal and his notebook reflect these two descriptive modes; when he was a naturalist describing the birds "philosophically,"

<sup>37</sup> Wallace, *Malay Archipelago* (cit. n. 20), p. 329, from the island of Batchian, Oct. 1858–Apr. 1859; in his journal, Wallace wrote simply that "in the first few days my men did not bring many birds, but there was one which greatly surprised & delighted me" (Ms. Journal [cit. n. 1], p. 159).

<sup>38</sup> The epistemic importance of this sort of relationship is discussed in Shapin, *Truth* (cit. n. 6), pp. 355–407; several references to the role of technicians are given on p. 360. Shapin describes a situation in which a servant "assured" Boyle of a particular observation, "and so the matter of fact was recorded" (p. 387).

<sup>39</sup> Wallace read the paper at the Zoological Society of London, May 27, 1862 (cit. n. 30). Subsequent reports and descriptions were widely read and incorporated into other natural history publications, ranging from museum lists through scientific articles to prestigious large-format hand-painted books. The most popular was Wallace's *Malay Archipelago* (cit. n. 20); papers reporting on birds of paradise include Wallace, "On the Great Bird of Paradise, *Paradisaea apoda*, Linn., 'Burong mati' (Dead Bird) of the Malays; 'Fanehan' of the natives of Aru," *Ann. Mag. Nat. Hist.*, 1857, 20(2nd ser.):411–416; "On the Natural History of the Aru Islands," *Ann. Mag. Nat. Hist.*, 1857, suppl. to vol. 20(2nd ser.):473–485; and "Narrative of Search," (cit. n. 30); the two 1857 papers were published in the *Natuurkundig Tijdschrift voor Nederlandsch Indie*, vol. 17. Synthetic papers on the zoogeography of the region incorporate his findings on birds of paradise, including the paper that first presented Wallace's Line, "On the Physical Geography of the Malay Archipelago," *J. Royal. Geog. Soc.*, 1863, 33:217–234 (map). Wallace's information was quickly absorbed into several works: Daniel Elliot, *A Monograph of the Paradiseidae or Birds of Paradise* (London, 1873), a large-folio monograph on paradise birds dedicated to Wallace; Robert Wagner, "Der Verbreitung der Paradiesvogel," *Der Zoologische Garten*, 1873, 14:6–14 (18 Kärtchen); and John Gould, *The Birds of New Guinea and the Adjacent Papuan Islands* (London: Henry Southeran, 1875–78).

he is the lone observer, but when he is writing a narrative of travel and collecting, his account includes others.<sup>40</sup>

It was during these very years of carrying out the work of collecting that Wallace wrote his pivotal papers on evolution. It was this painstaking work as collector and naturalist that provided him with the detailed knowledge that he brought to bear in his theories, including evolution. The highly restricted distribution of the birds of paradise became grist for his evolutionary mill. At the same time his bird collections were highly profitable, the first shipment from Aru bringing in £1000, an outstanding sum in comparison with other sales.<sup>41</sup> His financial success as a collector supported his intellectual natural history pursuits. Wallace devoted tremendous effort to collecting what the market demanded, but he also collected the kind of information about these birds that the more serious-minded naturalists sought. He claimed that information about obscure and minute species was equal in value to knowledge of large and showy forms for the purposes of the “philosophic naturalist.”<sup>42</sup> Wallace’s bird of paradise collections secured his success as a collector in status as well as money; this, in turn, gave his theoretical work a firmer base, for he had seen and captured what others had not.

#### “MY GOOD FRIEND AND AGENT”

Fieldwork is only one part of producing knowledge, but relationships are essential to the other parts, just as Wallace’s relationship with Ali was vital to his success as a collector and naturalist. His achievements in the London society of philosophical natural history depended on his relationship with his agent, Samuel Stevens. Stevens, treasurer of the Entomological Society of London, was an enthusiastic collector of British beetles and butterflies, and brother of Mr. J. C. Stevens, the well-known natural history auctioneer. During Wallace’s years in the East (1854–1862), Stevens conscientiously used his connections in London’s growing specimen trade and his commercial acumen to make sales profitable for both of them, Stevens earning a twenty-percent commission. The amounts involved not only provided for Wallace’s living expenses, but the excess, invested by Stevens in Indian railway stock, left Wallace a modest income.<sup>43</sup> Stevens regularly sent Wallace’s letters from abroad and advertisements of his collections to natural history journals, and he exhibited the specimens at the Entomological and Zoological Societies. Moreover, Ste-

<sup>40</sup> Wallace, *Species Notebook*, pp. 72, 135, 160; *idem*, *Ms. Journal* (cit. n. 1), pp. 70, 77, 86, 101.

<sup>41</sup> Wilma George, “Alfred Wallace, the Gentle Trader: Collecting in Amazonia and the Malay Archipelago 1848–1862,” *J. Soc. Bibliogr. Nat. Hist.*, 1979, 9: 503–514, lists several sales; the amounts involved per consignment were all less than £100.

<sup>42</sup> Wallace, “Aru Islands” (cit. n. 39), p. 480. Soon after Wallace’s first theoretical paper appeared in 1855, Stevens wrote to him that several naturalists expressed regret that he was theorizing rather than collecting facts. Although Wallace expressed some dismay at the lack of positive response to his paper when it was first published, neither Stevens’s report nor the lack of encouragement prevented him from pursuing philosophical natural history. Wallace, *My Life* (cit. n. 1), Vol. I, p. 355; Marchant, *Letters* (cit. n. 24), p. 54.

<sup>43</sup> Wallace wrote in his autobiography that his income upon returning home was about £300 per annum, while George calculated it to be substantially less. Wallace changed the investments in years following and lost most of his capital. George, *Biologist Philosopher* (cit. n. 10), pp. 26, 87, 94; *idem*, “Gentle Trader” (cit. n. 41), p. 510; Wallace, *My Life* (cit. n. 1), Vol. II, pp. 377–380.

vens insured the collections sent from abroad, kept Wallace supplied with cash and supplies as needed, and wrote to him regularly.

The complexity of their connection is exemplified in an interesting arrangement Stevens made concerning Wallace's specimens with George R. Gray at the British Museum. The museum agreed to purchase Wallace's bird collections from the East Indies in their entirety, with the understanding that Gray would describe them all, novel as well as already-described species.<sup>44</sup> Gray received credit for published descriptions of new species, and the museum purchased one complete set of bird specimens, the duplicates. The other set, the originals selected by Wallace, was retained by Stevens until Wallace's return. Significantly, the set that Wallace chose for his own collection contained all of the type specimens, i.e., the specimens to which the binomial name is formally tied and on which the written description is based. This arrangement highlights Stevens's role as broker. He did not simply turn Wallace's specimens into cash, he positioned Wallace's name and collections to maximize their monetary as well as scientific value.

Although it might seem that Stevens's motives were purely financial, there is evidence that he was as much a friend to Wallace as an agent, one who understood and supported his goals. With basic good business sense, Stevens had insured Wallace's collections from Brazil, and when these were lost at sea, the insurance money (approximately £150) was Wallace's safety net when he returned to England. Yet Stevens did more than process the insurance claim; he met Wallace the day of his return from Brazil in 1852, took him to a ready-made clothes shop for a warm suit, to Stevens's tailor for proper fitting, and then to Stevens mother's house for a week of home cooking and rest after his trying voyage home. Wallace rented a house for his stay in London within easy access of Stevens's office, the Entomological and Zoological Society's offices, and the British Museum. Whatever the business outcome of their work on Wallace's Brazilian collections, by the time Wallace left for the East, they had a secure relationship. Stevens submitted for publication in *The Annals and Magazine of Natural History* and the *Zoologist* excerpts from Wallace's letters describing his collecting activities throughout his years abroad, again suggesting that he did more than was necessary in supporting Wallace's identity as a serious naturalist, not a mere collector. No doubt Wallace's and Stevens's interests overlapped, but this need not mean that we ignore the feelings that were part of their mutual commitment.

Roughly from the ages of twenty-five to forty, Wallace had a friend whom he trusted to turn his labors into cash, and to keep him abreast of the reactions to his collection and of scientific developments relevant to his work. Wallace's primary connection to the communities of collectors and natural scientists in England was through a relationship with this one individual. While there were other agents and auction houses, an agent any less knowledgeable, capable, or supportive than Stevens might have made the difference between success and failure for Wallace. This relationship evolved as it did over the years not simply because it brought practical

<sup>44</sup> British Museum, *The History of the Collections Contained in the Natural History Departments of the British Museum*, 3 vols. (London: British Museum, 1906), Vol. II, p. 489; *ibid.*, Vol. II, Appendix, by Albert Gunther (London: British Museum, 1912), p. 27. In addition to the original sales, Wallace later (in 1873) sold his own set, including the type specimens, to the museum.

gain for both individuals, but because they developed a sense of trust and understanding in one another over time.

Of all the family, friends, colleagues, and acquaintances that Wallace described in his autobiography and narratives, Stevens and Ali are the only ones for whom he used the word “trustworthy.”<sup>45</sup> Other evidence of positive feelings in this relationship comes from Wallace’s description of Stevens in his autobiography. He wrote that Stevens spared no pains on his behalf and could be counted on to respond to various needs. Wallace concluded that during the whole period of his relation with Stevens, extending over more than fifteen years, he could not remember them having the least disagreement about any matter whatever. It is not the absence of conflict as such that is telling in his reminiscences, but the special quality of partnership that is embodied in the word “trust.” Wallace used the word “trustworthy” for a reason: the adjective describes a synthetic judgment based on past behaviors and a prediction of future actions such that Wallace considered him an excellent and reliable agent. The trust was specific to their mutual relationship; Stevens acted as he did because he trusted the integrity of Wallace’s endeavors.

#### CONCLUSION

When Wallace left for the Amazon in 1848 he was 25 years old; when he returned to England from the East Indies in 1862 he was 39. He spent twelve of these fourteen years in the field. His experiences in the field changed him from an inexperienced collector, smitten by natural history, into a committed and well-published naturalist. Wallace became confident by demonstrating to himself and to the English natural history community that he had mastered the various skills necessary to be, not just a good collector, but a philosophical naturalist, and to be recognized as such. Recognized by whom? By the powers that paid his way, by the agent who supported his efforts, by the editors who published his letters and articles, and by other naturalists, including Darwin, who read and responded to his publications, and importantly, by Europeans in Brazil and the Malay who made possible his every move. His mastery as a natural scientist grew out of his ability to meet the material, social, intellectual, and personal demands of his collecting activities.

Wallace’s choices were shaped by the resources available to him. He could not have started on his career as a tropical collector had there not been in place a heterogeneous society of collectors, agents, naturalists, editors and publishers, and Europeans settled sparsely in Brazil and much more extensively in the East Indian archipelago. The networks of colonial culture, in all their religious, economic, and military complexity, were as necessary to Wallace’s scientific achievements as were his scientific forebears. He used these resources to create a practice that was built of his own experiences, and these practices necessarily involved other people.

I have only briefly mentioned his friendships with other naturalists, such as Bates, Darwin, Lyell, and Spruce, while emphasizing those that were important in carrying out the practical tasks of fieldwork. I have described the relationships to Stevens and to Ali to demonstrate that the trust and other feelings that emerge in working relationships were critical in Wallace’s life as a fieldworker and scientist. In other

<sup>45</sup> Ali in Wallace, *Malay Archipelago* (cit. n. 20), p. 407; Stevens in Wallace, *My Life* (cit. n. 1), Vol. I, p. 266.

styles of fieldwork entrepreneurship, competition and exploitation may be more appropriate dynamics of interaction. But in the case of Wallace and doubtless many other fieldworkers, friendship, trust, respect, and affection were just as central to doing science as competition and greed.<sup>46</sup>

Were Ali and Stevens replaceable? Stevens was arguably interchangeable; after all, there were dozens of agents, and the relationship was not invented by one man. I cannot say that Wallace would not have gone on without Stevens's financial conscientiousness, but his personal, professional, and financial support was crucial, particularly at the point when Wallace returned from Brazil sick, penniless, and without most of his collection. Stevens was an extremely effective agent, keeping Wallace's name visible in the natural history community in London. So too with Ali, who was not the only possible trustworthy servant in the Malay Archipelago, but he was arguably one of very few, and he was special. Trustworthy servants were a valued resource, as always, and in Wallace's situation, with limited resources and superficial connections in a foreign land, Ali was all the more valued. Most of the servants Wallace employed were replaceable; Ali was not.

Wallace trusted Ali with his life and his science because of the bond that evolved over the years. I have identified specific moments in which Wallace's knowledge of Ali enabled him to rely on him to steer a boat, to describe a bird, and to translate his wishes to local peoples. Ali's loyalty to Wallace, and his taking of Wallace's name, are evidence of the strength and mutuality of their bond, although it is difficult to specify what Ali's trust in Wallace meant in concrete terms. However, other times and places in which a servant has become a highly valued member of a household come readily to mind. Considering the bond between Wallace and Ali in light of what each of them might have understood about servants and masters, the positive feelings between them are not surprising or unusual. Similarly, Stevens was not a uniquely trustworthy agent. What is important is that feelings play a role in the interactions that comprise scientific work. Just as being human requires our activities to be social, so it requires that our choices and commitments involve feelings as well as reasoning.

I believe that the mastery and commitment that allowed Wallace to return to England a reflective, successful naturalist are based in his relationships with people with whom he interacted in the daily practice of his craft. He readily formed friendships and connections with Europeans in the Malay, which in turn gave him access to the sites, materials, means of transport, and local peoples needed to carry out his collecting. His relationships with Stevens and Ali were crucial to his fieldwork. This work was not done by Wallace alone.

<sup>46</sup> Star and Griesemer, "Boundary Objects" (cit. n. 5), discuss some of the limits of a cooperation model when members of different communities interact to create single representations.