

Rich man, poor man

David L. Hull

Just Before the Origin: Alfred Wallace's Theory of Evolution. By John Langdon Brooks. Columbia University Press: 1984. Pp.284. \$30 (United States), \$39 (elsewhere).

Alfred Russel Wallace: The Great Naturalist who Challenged the Orthodoxy which He and Darwin had Established. By Harry Clements. Hutchinson: 1983. Pp.215. £8.95.

In spite of striking parallels, the lives of Charles Darwin and Alfred Russel Wallace could not have been more different. Darwin was born into comfort and security, attended the best schools, accompanied Captain Fitzroy on the *Beagle* as a companion-naturalist, and upon his return settled down to a remarkably uneventful life — walks in his garden at Down, bouts of flatulence, an occasional visit to a spa to nurse his mysterious illness, and of course the publication of book after book on topics as diverse as the power of movement in plants and the formation of vegetable mould by worms.

Wallace was born in near poverty, was farmed out to an older brother in London at the age of 14 after only six years of schooling, and held down a succession of jobs until his brother died leaving him a bit of money. Wallace immediately set sail for the Amazon. A year later a second brother joined him. Both men came down with yellow fever and the brother died. After four years in the jungle, Wallace sailed for home with his precious collections. *En route* the ship caught fire and sank. After ten days on the open sea in a small boat, Wallace was saved, but four years of labour went down with the ship. No sooner did Wallace find his way to England than he began to plan for a second voyage, this time to the Malay Archipelago. It was here, while confined to his bed with a fever, that the idea of natural selection flashed across his brain.

Dozens of biographies have been written of Darwin. Only a handful of books have chronicled Wallace's even more fascinating life, and most of these have treated Wallace as if he were Darwin's moon, shining only in Darwin's reflected brilliance. The volumes by Brooks and Clements are the latest additions to this small literature. Brooks's book is primarily a scientific biography, tracing the genesis of Wallace's ideas on organic change from his reading of Chambers's infamous *Vestiges of the Natural History of Creation* (1844) to the publication of the joint Darwin-Wallace papers in 1858.

Clements's biography is a good deal less technical and is more concerned with Wallace's later life, especially his championing of a variety of unorthodox scientific and social causes. Because Clements himself practised for many years his own brand of osteopathic nature cure,

is his inevitable indictment of Darwin's treatment of Wallace. As the story is usually told, Darwin became persuaded that species evolve sometime in 1837, stumbled across natural selection in 1838, and worked on his theory for the next 20 years. In 1855 he noticed a paper published by Wallace arguing that new species always come into existence in close proximity in both space and time with pre-existing closely allied species but convinced himself that Wallace intended creation, not transmutation. This paper did, however, contribute to Darwin's decision to begin work on his Big Book. Darwin even corresponded with Wallace, informing him that he too had been working on the species question.

As a working-class boy, Wallace knew no one. His 1855 paper had been totally ignored, at least so he thought. His new manuscript setting out evolution by means of natural selection was even more speculative than the first. How to get his fellow naturalists to notice? How could he prevent them from dismissing it with derision? Darwin was his only hope. Thus, on 18 June, 1858, Darwin received Wallace's manuscript that came like a "bolt from the blue". Darwin promptly sent the manuscript to Charles Lyell, as Wallace had requested, accompanied by a letter asking for advice about what he should do. He wanted to behave honourably, but he also did not want to be robbed of priority. Lyell and J. D. Hooker suggested that Wallace's paper be read along with a couple of short pieces by Darwin before the Linnean Society and then published in its journal, and this was the course of action that was eventually taken — without consulting Wallace. A year later Darwin published his *Origin of Species*.

Darwin was the first to admit that he deserved no special priority in the matter of the transmutation of species. A large number of workers before him, including his own grandfather, had advocated evolution of sorts, but Darwin did claim priority for natural selection. Needless to say, numerous anticipations have been uncovered since, and Loren Eiseley has even argued that Darwin stole the idea of natural selection from his friend Edward Blyth. That Blyth himself thought otherwise is beside the point. Brooks goes even further. A third pillar of Darwin's theory was his Principle of Divergence, a suggested mechanism for the subdivision of single ancestral species into two or more daughter species. Brooks claims that Darwin stole his later formulation of this principle from Wallace. Brooks argues that the appear-

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"A.R. Wallace admiring *Eremurus robustus* (about 1905)". The picture and caption are reproduced from Vol.II of *Alfred Russel Wallace: Letters and Reminiscences* by James Marchant, published by Cassell in 1916.

he is more sympathetic to Wallace's heterodox views than other authors have been in the past.

The most valuable part of Brooks's book is his detailed discussion of the genesis of Wallace's views on evolution and biogeography. In this connection, Wallace had one major advantage over Darwin. Wallace was persuaded that species evolve prior to leaving on his voyages, while Darwin did not abandon creationist beliefs until after his return. Thus, Wallace was able to gather data with an eye to his evolutionary hypothesis.

The weakest part of Brooks's discussion

ance of Wallace's 1855 paper not only caused Darwin to start his species book but also provided him with his tree simile. This latter contention is clearly false because Darwin included two drawings of an irregularly branching "tree of life" in his 1837 notebooks. More importantly, Brooks claims that Darwin received Wallace's paper on 18 May, 1858, not 18 June. As Brooks construes the evidence, Darwin immediately sat down to write Lyell a letter, but did not mail it. Instead, he went back to re-read Wallace's 1855 paper and then proceeded to re-write his discussion of the Principle of Divergence. Only after he had reported the completion of this section did he send his letter to Lyell along with Wallace's manuscript. Darwin himself dated the letter only "18th". According to Brooks, the pencilled notation "June 1858" was added later and indicates when Lyell received the letter, not when Darwin sent it.

I suppose the proper thing for Darwin to have done when he received Wallace's manuscript was to forward it to Lyell as requested and then to write Wallace in Malay for permission to publish it. Six months to a year later, the time it would have taken Darwin to receive an answer from Wallace, he could then have seen the paper into print. If he had, I suggest that the history of evolutionary theory and the apportioning of credit would not have changed in the least. Darwin's critics could then complain at Darwin's inexcusable delay in publishing Wallace's paper. Scientists are very interested in priority and rarely miss a chance to engage in vicious priority disputes. For once two scientists declined the opportunity, but commentators such as Brooks will have none of it. They turn over every bit of nastiness that they can discover or invent. I have no idea what took place in Down between 18 May and 18 June in 1858, but if the choice is between Brooks's circumstantial evidence and the testimony of a long life lived in the public spotlight, I am inclined to go along with Wallace and opt for Darwin.

In Clements's book Wallace is the sun, and Darwin is only a dim though benign spectre circling in the distance. As Clements portrays Wallace, he was an honourable and decent, though somewhat unworldly, man. Darwin consciously built a reputation as a serious scientist before declaring himself on such a controversial subject as evolution. Wallace was thrust into the public eye immediately upon his return from his second trip. A more judicious man might have followed Darwin and written a series of technical monographs elaborating his views on the transmutation of species. He did publish works of this sort, but he also came out in favour of supernaturalism, phrenology, mesmerism, the nationalization of land, and eventually socialism, while opposing vaccination, vivisection and any form of militarism. Wallace's fellow evolutionists were not pleased. Upon receipt of a paper by

Wallace arguing for the scientific validity of certain reports of supernatural phenomena, Huxley replied that he had "never cared for gossip, and disembodied gossip, such as these worthy ghosts supply their friends with, is no more interesting to me than any other" (p.114).

When it came to human beings, Wallace was not a Social Darwinist. He thought that most of the illnesses of the time were due to the conditions under which people had to live, and he urged radical social change to alleviate them. He was less enthusiastic about intervening in non-social phenomena. He was highly critical of the claims that the medical establishment was making at the time for vaccination. He thought that once people lived in healthy surroundings with ample food and clean air, vaccination would be unnecessary. A healthy person need not fear being attacked by disease. At the very least, Wallace argued that the figures available indicated that vaccination was causing more illness than it was preventing. For both moral and economic reasons, Wallace also favoured vegetarianism, but he himself was unable to practise it, especially after a diet of hot water and lean meat advocated by a Dr

Salisbury cured him of his chronic fevers.

My main reservation about Clements's book is his repeated contrast between Darwin, who "kept within the narrow limits of his natural selection orbit" (p.xix) and the more pluralistic Wallace, who eventually came to believe that no naturalistic explanation could be given of the origin of either life or mind. To the contrary, Wallace was the one who argued for the all-sufficiency of natural selection, while Darwin acknowledged subsidiary roles for a variety of additional forces. When Wallace became convinced that natural selection was inadequate to account for the superabundant powers of the human brain, he had no auxiliary naturalistic hypotheses to fall back on and was forced to posit a supernatural agency.

For anyone who wants to follow the genesis of Wallace's theory of evolution, the early chapters of Brooks's book are helpful. For anyone wishing to understand Wallace as a total person, Clements's biography is a good place to begin. □

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Eye of the beholder

Jonathan Silvertown's textbook, Introduction to Plant Population Ecology, was published by Longman in November 1982. To date some ten reviews have appeared, with more still to come. No one who has written a book and then followed the subsequent reviews will be surprised that reviewers found different things in the book:

On the one hand . . .

"Ecological curiosities — parasitic angiosperms, carnivorous plants, the vine habit — have been neglected." (*Ecology*)

"Another annoying problem with the book is that the 'summary' section at the end of each chapter seems superfluous . . ." (*Ecology*)

"In places the text is extremely condensed and may cause some difficulty, especially for the less numerate student." (*Ann. Bot.*)

"There are, however, some significant omissions. For example, the reader might be excused for concluding that pathogens have no effect on births and deaths of plants and that herbivores have little effect." (*Times Higher Education Supplement*)

"Subjects such as natural selection (p.5) and seed and pollen movement (p.22) are regarded as beyond the scope of the book . . ." (*J. appl. Ecol.*)

. . . but then, on the other

"The vine of evergreen tropical forest whose oskars store food reserves in large tubers and whose central stem suddenly 'sprints' upwards to the tree canopy . . . provides a splendid focus for a discussion of dormancy." (*J. biol. Educ.*)

"A particularly useful feature is the use of summaries at the end of each chapter. . ." (*J. biol. Educ.*)

"The book will be readily understood by those with little background in mathematics." (*Times Higher Education Supplement*)

"Though it is not apparent from the list of contents the role of pathogens and animal predators is dealt with in relevant sections." (*Ann. Bot.*)

"Silvertown makes many pertinent comments on the work he is quoting, and always has an eye for the evolutionary implications of the subject under discussion." (*Biologist*)