

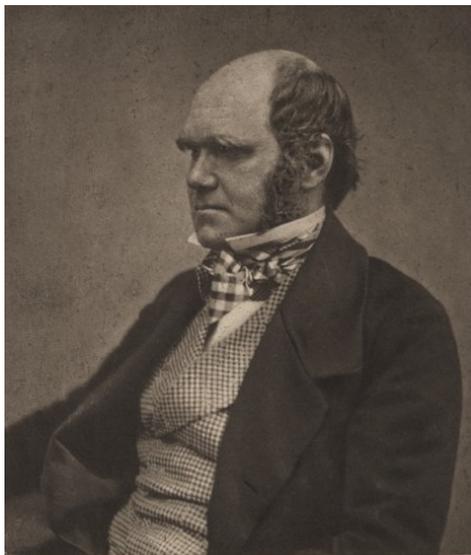
Edited transcript of a talk at the symposium 'Wallace and Darwin's Theory of Natural Selection 150 years on - current views', hosted by the Research School of Biological Sciences, Australian National University, 11 July, 2008 (the proceedings of the symposium are to be found at <http://www.rsbs.anu.edu.au/WallaceDarwin/index.php>)

A Trumpery Affair
How Wallace stimulated Darwin to publish and be damned

Ian Cowan

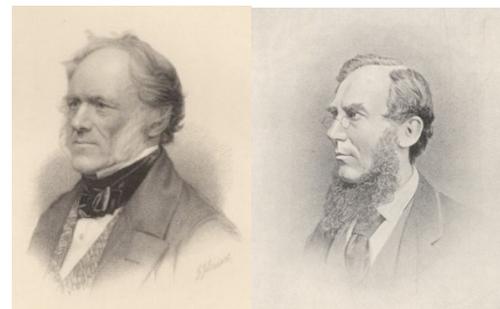
On July the first, one hundred and fifty years ago, a theory was unveiled to a small select audience in London that profoundly affects the way many of us think about ourselves today. Let us resurrect the drama of that occasion and the events that surrounded it.

The actors are four. First among three equals, chronically unwell Charles Darwin - the antithesis of his ebullient, worldly, polymath grandfather, Erasmus - is working on his "big book" in Down House, Kent. It is twenty-two years since he returned from his voyage on the *Beagle*; sixteen since he had allowed himself "the satisfaction of writing a very brief abstract of my theory in pencil in thirty-five pages," to be enlarged two years later, in 1844, into one of 189 pages¹. But he has not yet published anything on the subject of evolution.



Charles Darwin c. 1854

Next, there are the two eminent friends of Darwin: Sir Charles Lyell, author of *Principles of Geology*, populariser of the doctrine of uniformitarianism, and "one of the brightest ornaments of the nineteenth century;"² and Joseph Dalton Hooker, the leading botanist of his day, assistant to his father, Sir William Jackson Hooker, Director of the Royal Botanic Gardens at Kew. Hooker, like Darwin, had made a long voyage of exploration by sea: on HMS *Erebus* with Captain Ross's expedition to the South Magnetic Pole from 1831 to 1836. He is completing the *Flora Tasmaniae*, the third great work deriving from his botanical studies during that expedition.



Sir Charles Lyell Joseph Dalton Hooker

Last, almost 8,000 miles away, Alfred Russel Wallace, a lone, little known, self-employed collector of natural history specimens, first in the Amazon and now in the Malay Archipelago, "the land of the orang-utan and the bird of paradise," is recovering from malaria in Ternate, a volcanic pimple in the Moluccas, a Spice Island, for centuries the source of the world trade in cloves.



Mount Gamalama, the volcano that dominates the island of Ternate.

Eleven years earlier, after a day in the British Museum bemused by the huge numbers of beetles and butterflies on display, Wallace had written to Henry Walter Bates, soon to be his companion on the voyage to the Amazon, "I begin to feel rather dissatisfied with a mere local collection; little is to be learnt by it. I should like to take some one family to study thoroughly with a view to the theory of the origin of species." ³ Now, in Ternate, still feverish, an idea comes to him, as all ideas seem to do, "in a flash." ^{4,5} He sets it out in the form of a publishable essay, "On the Tendency of Species to Depart Indefinitely from the Original Type", and posts it, together with a covering letter, to Charles Darwin, Down House, Kent.

The packet leaves on the Dutch inter-island mail steamer in March, 1858. Wallace himself embarks on a trading schooner, the *Hester Helena*, for his "long-wished for voyage to the mainland of New Guinea." Soon he is looking "with intense interest on those rugged mountains, retreating ridge behind ridge into the interior, where

the foot of civilised man had never trod. There was the country of the cassowary and the tree-kangaroo, and those dark forests produced the most extraordinary and the most beautiful of the feathered inhabitants of the earth - the varied species of Birds of Paradise." ⁶

His essay, trans-shipped in Batavia, proceeds to Singapore. The Peninsular and Oriental Steam Navigation Company transports it to Colombo, and thence to Suez. It goes on by train to Alexandria, by ship again to Marseilles, overland to Paris, and by boat-train to London. When it arrives at Down House, Wallace is settled in the village of Dorey, "fairly established as the only European inhabitant of the vast island of New Guinea." For the time being we may leave him there. It will be another four months before he learns what had befallen his "Ternate Essay".

It is now early summer in England. But the atmosphere in Down House is gloomy. Two of Charles' and Emma's children are ill, the infant Charles Waring mortally so. And suddenly, Darwin is struck by the fear that his theory, *his* theory, conceived so long ago and nurtured in secrecy, is also to be taken from him.



Downe House, as it is today

He had been warned. Beginning with a request for specimens, he had already corresponded with Wallace and learned something of his interest in evolution.

Moreover the “Ternate Essay” was not the first fruit of Wallace’s thoughts on that subject. In February 1855, while the guest of Sir James Brooke, the “White Rajah” of Sarawak, he had written what became known as the “Sarawak Essay.”⁷ Published later that year, it had impressed Sir Charles Lyell and given him the premonition that Wallace was hard on Darwin’s heels. It argues that, “Every Species has come into existence coincident both in space and time with a pre-existing closely allied species;” and likens phylogeny to a tree, “a complicated branching of the lines of affinity, as intricate as the twigs of a gnarled oak or the vascular system of the human body...the stem and main branches being represented by extinct species of which we have no knowledge, while a vast mass of limbs and boughs and minute twigs and scattered leaves is what we have to place in order.” The paucity of the fossil record and the significance of vestigial organs are discussed. There are speculations on geographical speciation, including that in the Galapagos Islands. This last must have enhanced Lyell’s concern on Darwin’s behalf. The following year, he urged Darwin to publish at least “some small fragment of your data, *pigeons* if so you please & so out with the theory & let it take date & be cited & be understood.”⁸ “I rather hate the idea of writing for priority,” Darwin replied. That was not the only reason for his reluctance. Many years earlier, in 1844, when first apprising Hooker of his theory, he had remarked that, “it is like confessing a murder.” Of what or of whom one might ask: his own respectability or the human soul? It was probably both. Nevertheless, at Lyell’s behest, Darwin set about writing what he described as a “sketch” of his views. By the time Wallace’s letter from Ternate arrives, the “sketch” has become “my big book,” and comprises some million words.⁹

Now Darwin writes to Lyell, “Some year or so ago, you recommended me to read a paper by Wallace in the *Annals*, which had interested you & as I was writing to him, I knew this would please him much, so I told him. He has today sent me the enclosed & asked me to forward it to you. It seems to me well worth reading. Your words have come true with a vengeance that I should be forestalled. You said this when I explained to you here very briefly my views of “Natural Selection” depending on the Struggle for existence. I never saw a more striking coincidence; if Wallace had my MS sketch written out in 1842, he could not have made a better short abstract! Even his terms now stand as Heads of my Chapters.” He is in no doubt as to the proper course of action: “Please return me the MS, which he does not say he wishes me to publish, but I shall, of course, write to him at once and offer to send [it] to any journal.” Darwin cannot refrain from lamenting the emotional cost: “So all my originality, whatever it may amount to, will be smashed....”

But Darwin does not write to Wallace at once. Instead, a week later, he writes again to Lyell. Honour is the problem. It will be cited five times before matters are resolved. “I am very very sorry to trouble you, busy as you are, in so merely personal an affair; but if you will give me your deliberate opinion, you will do me as great a service as ever man did, for I have entire confidence in your judgment and honour...” Then comes a plan of action. “There is nothing in Wallace’s sketch which is not written out much fuller in my sketch copied in 1844, & read by Hooker some dozen years ago. About a year ago I sent a short sketch of which I have a copy of my views to Asa Gray [the leading botanist in the U.S.A. and a friend of Darwin], so that I could most truly say & prove that I take nothing from Wallace. I should be

extremely glad now to publish a sketch of my general views in about a dozen pages or so. But I cannot persuade myself that I can do so honourably.... This is *a trumpety affair* [my emphasis] to trouble you with, but you cannot tell how much obliged I shall be for your advice. By the way, would you object to send this and your answer to Hooker to be forwarded to me? For then I shall have the opinion of my two best and kindest friends." Perhaps feeling he has revealed a regrettable tendency to indecision, Darwin adds, "I will never trouble you or Hooker on the subject again."

That was not to be. The next day he addresses Lyell with what he calls a postscript. A nervous uncertainty continues to afflict him. "It seems hard on me that I should be thus compelled to lose my priority of many years' standing, but I cannot feel at all sure that this alters the justice of the case. First impressions are generally right, and I at first thought it would be dishonourable in me now to publish." He adds a further postscript, a PPS to accompany the SOS. "I have always thought you would make a first-rate Lord Chancellor; and I now appeal to you as a Lord Chancellor."

Who better to sit in judgement than a putative Lord Chancellor? Lyell is a decent man. But approached with such candour, so many protestations of honour, such generous expressions of esteem from one he esteemed, it is small wonder that his decision does not quite represent the interests of a stranger on the other side of the globe. He duly enlists the services of a compliant Hooker. Perhaps neither of them are fully aware that their roles have already been planned and their script written. All that is left to do is to find the stage.

It would be in the rooms of the Linnean Society, Burlington House,

Piccadilly. There, at a meeting on the first of July, the Secretary of the Society reads a paper, the authorship of which is attributed jointly to Charles Darwin Esq., FRS, FLS, and FGS, and Alfred Russel Wallace, Esq.¹⁰ It is prefaced by a letter from Lyell and Hooker to the President explaining that "the two indefatigable naturalists, Mr. Charles Darwin and Mr. Alfred Wallace.....having independently and unknown to one another, conceived the same very ingenious theory to account for the perpetuation of varieties and of specific forms on our planet, may both fairly claim the merit of being original thinkers in this area of inquiry; but neither of them having published his views, though Mr. Darwin has for many years past been repeatedly urged by us to do so, and both authors having now unreservedly placed their papers in our hands, we think it would best promote the interests of science that a selection from them should be laid before the Linnean Society."

Of Wallace's essay they write, "So highly did Mr. Darwin appreciate the value of the views expressed therein set forth, that he immediately proposed, in a letter to Sir Charles Lyell, to obtain Mr. Wallace's consent to allow the Essay to be published as soon as possible. Of this step we highly approved, provided Mr. Darwin did not withhold from the public, as he was strongly inclined to do (in favour of Mr. Wallace), the memoir which he had himself written on the same subject, and which, as before stated, one of us had perused in 1844, and the contents of which we had both been privy to for many years."

The substance of the hastily assembled "joint paper" comprises, first, a fragment from Darwin's unpublished 1844 sketch. It is an account of natural selection based on the Malthusian struggle for life and the existence of individual heritable variation. It also

mentions sexual selection: the struggle of males for females, enhanced “in the case of birds, apparently, by the charm of their song, by their beauty or their power of courtship.” That female birds might be seduced by such means is a thesis which Wallace was later to reject, despite his acquaintance with birds of paradise, having “that exquisite beauty and that marvellous development of plumage, calculated to excite admiration and astonishment among the most civilized and most intellectual races of man.”¹¹



*Male Lesser Bird of Paradise, *Paradisaea papuana* = *Paradisaea minor*, drawn and lithographed by John Gould and William Hart, from “The Birds of New Guinea and the adjacent Papuan Islands, including many new species recently discovered in Australia.” London: John Gould & Richard Bowdler Sharpe, 1875 -1888. It was two males of this species that Wallace bought in Singapore in 1862, sustaining them on a diet of cockroaches until, on reaching London, he “was glad to transfer them to the care of Mr. Bartlett, who conveyed them to the Zoological Gardens.” (Wallace, 1905)*

Darwin’s second contribution to the paper is part of the letter he had written to Asa Gray included, mainly it seems, because it contains his first account of

what he called the “principle of divergence” – an attempt to explain ecological speciation. Finally there is Wallace’s “Ternate Essay.” It is broadly consistent with the fragment from Darwin’s sketch – why else would Darwin have said, “if Wallace had my MS he could not have made a better short abstract of it”? There are differences. Wallace does not accept the analogy between domestic and natural selection. He vigorously dismisses Lamarckian evolution – something which Darwin later toyed with in the form of “pangenesis.” And Wallace’s essay, as with all his work, is concisely and precisely written. It would, one imagines, have been readily accepted for publication in the *Annals and Magazine of Natural History*.

Darwin himself is not present: his youngest son was buried that day. When Hooker informs him of the Linnean proceedings three or four days later, he has recovered somewhat from the domestic tragedy. “Thank you much for your note,” he replies,” telling me that all had gone on prosperously at Linnean society -- you must let me once again tell you how deeply I feel your generous kindness and Lyell's on this occasion. But in truth it shames me that you should have lost time on a mere point of priority.” However, priority is still of concern. “I can easily prepare an abstract of my whole work” he writes, and, “Directly after my return home, I would begin and cut my cloth to my measure...”

His distant competitor is not forgotten. “Lastly you said you would write to Wallace; I certainly should. much like this, as it would quite exonerate me: if you would send me your note, sealed up, I would forward it with my own.....”

When the letters from Hooker and Darwin arrived in Ternate, Wallace

had already returned from Dorey, "without much regret," he later wrote, "for in no place which I have visited have I encountered more privations and annoyances. Continual rain, continual sickness, little wholesome food, with a plague of ants and flies, surpassing anything I had before met with, required all a naturalist's ardour to encounter; and when they were uncompensated by great success in collecting, became all the more insupportable. This long-thought of and much-desired voyage to New Guinea had realised none of my expectations".¹² But now his spirits were lifted. To his mother he wrote, "I have received letters from Mr. Darwin and Dr. Hooker, two of the most eminent naturalists in England, which has highly gratified me. I sent Mr. Darwin an essay on a subject on which he is now writing a great work. He showed it to Dr. Hooker and Sir C. Lyell, who thought so highly of it that they immediately read it before the Linnean Society. This assures me the acquaintance and assistance of these eminent men on my return home."¹³ He replied to Darwin, and to Hooker, thanking him and Lyell for their "kind offices" in their handling of his "Ternate Essay." "It would have caused me much pain & regret", he said, "had Mr. Darwin's excess of generosity led him to make public my paper unaccompanied by his own much earlier & I doubt not much more complete views on the same subject, & I must again thank you for the course you have adopted, which while strictly justice to both parties, is so favourable to myself."

Darwin was encouraged. "I admire extremely the spirit in which they [Wallace's letters] are written. I never felt very sure what he would say. He must be an amiable man," he wrote to Hooker early in the new year."

"I am very greatly relieved," Hooker responded.

Sufficiently emboldened, Darwin resumed correspondence with Wallace without further support. "I was extremely pleased at receiving three days ago your letter to me and that to Dr. Hooker. Permit me to say, how heartily I admire the spirit in which they are written. Though I had absolutely nothing to do with leading Lyell & Hooker to what they thought was a fair course of action, yet I naturally could not but feel anxious to hear what your impression would be."

Meanwhile, doubtless energised by the thought that another disturbing essay might already be en route to London, Darwin was making rapid progress with his "abstract" of what had begun as a "sketch." In April, he informed Wallace that the first part of his MS was in the hands of his publisher, John Murray. "You will, I hope, think that I have fairly noticed your paper in the *Linnean Transacts*," he wrote, "You must remember that I am now publishing only an Abstract & I give no references. -- I shall of course allude you to your paper on Distribution; & I have added that I know from correspondence that your explanation of your law is the same as that which I offer....P.S. you cannot tell how I admire your spirit, in the manner in which you have taken all that was done about publishing our papers."

Darwin was still in a hurry, because, as he put it to Murray, "two men are already writing more or less on the subject, starting from the foundation of my [sic] Paper in *Linn. Journal*."

There was not so very long to wait. Proof corrections were finished on 11 September. The work became available to the public on 24 November. It was, of course, *The Origin of Species*. At last the truth was out and Charles Darwin "had damned himself to everlasting fame"¹⁴



Twenty-eight years later, he would write, for the benefit of his children, “though I cared in the highest degree for the approbation of such men as Lyell and Hooker, who were my friends, I did not care much about the general public. I do not mean to say that a favourable review or a large sale of my books did not please me greatly, but the pleasure was a fleeting one, and I am sure that I have never turned one inch out of my way to gain fame.”¹⁵

That, then, is the kernel of the “trumpery affair.” Darwin’s desperation to assert his “priority” was unseemly, as indeed he himself admitted. But if Wallace ever thought he had been treated ungenerously, he gave no hint of it.¹⁶ In presenting Wallace with the first gold Darwin-Wallace medal awarded by the Linnean Society at its celebration in 1908 of the “joint” paper, the President was able to say, without fear of contradiction, “There is nothing in the history of Science more delightful or more noble than the story of the relations between yourself and Mr. Darwin, as told in the correspondence now so fully published, — the story of a generous rivalry in which each discoverer strives to exalt the claims of the other.”¹⁷

It was not until the second half of the twentieth century that the relationship between Wallace and Darwin was subject to more realistic appraisal. Of the handling of the Ternate Essay, Barbara Beddall remarked that it “was not an occasion of ‘mutual nobility’, nor was it ‘a monument to the natural generosity of both the great biologists,’ as is so often claimed. It was clearly not mutual because Wallace’s paper was read without his knowledge or consent, and he knew nothing about it until October. Nor does it seem to have been particularly noble. However just Darwin’s claims to priority, he was a gainer, not a loser, from the decision. Wallace had no opportunity to be either noble or generous.”¹⁸

And Arnold C. Brackman wrote, “His [Darwin’s] behaviour following his receipt of the Ternate Essay was a tragic, human error of judgement, and the consequences were deplorable..... Darwin’s hunger resulted in Wallace’s failure to win the priority, acclaim, and recognition that were justly his. Wallace never completed his own “big book” on the theory, *Darwinism*¹⁹ notwithstanding. Wallace was forced to set off in a myriad of directions, flitting from project to project, subject to subject, in a desperate effort to keep his family afloat financially. This wide-ranging activity dissipated his time, energy, and, above all his originality. Wallace lost his place in history; worse, history lost whatever further contributions Wallace would have made had he stuck to evolutionary theory and continued to advance his theory of the origin of species. Wallace wound up, as he [himself] cheerfully admitted,.....as a ‘crank’.”²⁰

Sadly, events in which he may have played no part have tended further to tarnish Darwin’s reputation. The various letters that Lyell and Hooker wrote to him in preparation of the

Linnean meeting have not been found. The manuscript of Wallace's Ternate Essay and the letter that accompanied it have disappeared. And, apart from one fragment, the other five letters Wallace wrote to Darwin from the Malay Archipelago have not been preserved.²¹

There is, therefore, an empty niche to attract lively imaginations. Research into the postal services from the Dutch East Indies to London has convinced several authors that Darwin received two of the letters earlier than his own correspondence implied.²² What, then, was Darwin doing, it is asked, while he was secretly mulling over the content of missing letters? Was he making illicit use of anything he had learnt from Wallace? Brackman seems to think so. He argues that Wallace's concept of natural selection when he wrote his paper in Ternate was more complete than Darwin's, and insinuates that Darwin may even have appropriated some of Wallace's ideas. Roy Davies, author of *The Darwin Conspiracy*, published last month, has no doubt. He is convinced that "Charles Darwin ... lied, cheated and plagiarized in order to be recognized as the man who discovered the theory of evolution."

I think the assertions of Brackman and Davies are ill-founded. I have no time to review their arguments, except to suggest that they are based on confusion about divergence²³: between the fact of divergence and the cause of divergence; between geographical divergence and ecological divergence (between allopatric and sympatric speciation, to use modern terminology). The contribution of Davies to history relates more to postal schedules than science. Undoubtedly, Wallace had stimulated Darwin to think and write the more busily about evolution. But stimulation of that kind is the very basis of progress in science.

There is simply no evidence to dispute Darwin's plaintive note: "I could most truly say that I take nothing from Wallace" - except, of course, Wallace's right to have his Ternate Essay published independently.

Suppose Wallace had sent his essay directly to one of the journals in which he had already published; the *Annals* and *Journal of Natural History* perhaps. How, then, would subsequent history have been changed? Provided Darwin had still gone on to publish the *Origin* the following year, prefacing it with a gracious reference to Wallace and adding a remark such as, "I had been thinking along the same lines for some time myself and I now", then perhaps not so very much. Darwin's magnificent contribution to the explanation of evolution lay not only in the ideas, but in the wealth of evidence and argument with which he supported them. After all, it turned out later that a Scot, Patrick Matthew, a silviculturist, had already described natural selection clearly and concisely in 1831 in a book, *On Naval Timber and Arboriculture*.²⁴ Rather few know of Matthew and it is unlikely that many will.

However, if Darwin, devastated by what he would have seen as his loss of priority, had resumed his gloomy secretive musings in the seclusion of Down House, and delayed publishing anything until Wallace had written his own "Origin", then, yes, evolution by natural selection would have become Wallace's theory - Wallaceism I suppose. No amount of scholarly research would have given Darwin pride of place

As to Brackman's suggestion that lack of recognition forced Wallace to set off in a myriad of directions, one must have serious reservations about that. Certainly if Wallace had obtained the kind of recognition and position he

deserved, he would have had less time to “flit from project to project.” But he was a man of prodigious intellectual energy. Many of the projects did not have the least prospect of financial reward. And many of them – socialism and spiritualism for example - centred on ideas that were latent even before he had embarked with his companion Bates for the Amazon. It is an injustice to Wallace to suppose that he would not have developed them.



Wallace in Singapore in 1862, just before returning to England.

However this is not the place to expand on Wallace’s later interests. Rather, let us take up the narrative when he returns to England. Having transferred the two birds of paradise that had accompanied him to the care of the Zoological gardens, he buys himself an armchair and ensconces himself in a large empty room at the top of his brother-in-law’s house in Westbourne Grove. There, he writes, “I found myself surrounded by a quantity of packing-cases and store-boxes, the

contents of many of which I had not seen for five or six years, and the examination and study of which I looked forward to with intense interest.”



*Wallace's specimens of birdwing butterflies (Papilionidae) in the Wallace Collection at the Natural History Museum, London. The drawer was arranged by Wallace. The specimen on the middle left is a male golden birdwing butterfly, named by Wallace *Ornithoptera Croesus*. He caught the first specimen in 1859 while on the island of Batchian (Bacan), “The beauty and brilliancy of this insect are indescribable, and none but a naturalist can understand the intense excitement I experienced when I at length captured it,” he wrote. “On taking it out of my net and opening the glorious wings, my heart began to beat violently, the blood rushed to my head, and I felt much more like fainting than I have done when in apprehension of immediate death. I had a headache the rest of the day, so great was the excitement produced by what will appear to most people a very inadequate cause.” (Wallace, 1869)*

He has spent, altogether, twelve years, in tropical countries, in arduous conditions, often ill, often in danger, supplying museums and private collectors with exotic specimens. The collection he is about to sort includes some 3000 skins of birds of a 1000 species, 20,000 beetles and butterflies of 7000 species, as well as shells and various other items. He will publish 10 papers on his collection within the first year of his homecoming. Apart from

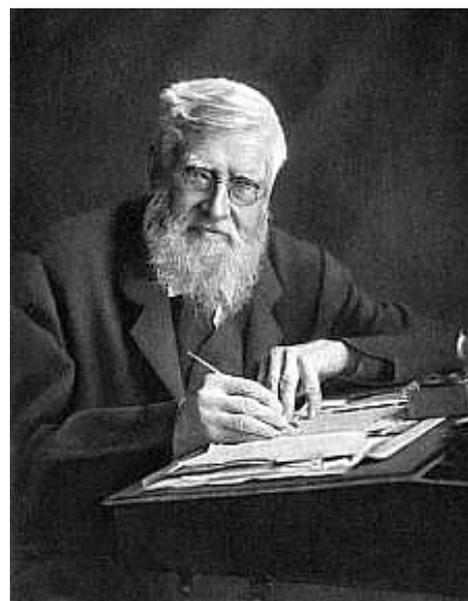
his collecting, he has written two books, and no less than sixty published articles and letters in learned journals. Amongst his publications are three of the most important papers in the history of biological science, the Sarawak and Ternate essays and another that I have not yet mentioned, on the division between the Asiatic and Australasian biota - the famous Wallace Line²⁵. His notebooks are crammed with observations of biogeography, observations that would be the basis for five books and profoundly influence subsequent studies of the subject..



Wallace's Line divides the Australian and Southeast Asian fauna. The deep water of the Lombok Strait between the islands of Bali and Lombok formed a water barrier even when lower sea levels linked the now-separated islands and landmasses on either side [from Wikipedia].

If ever a man deserved security and the opportunity to develop his ideas at leisure, it was Wallace. In fact he was never, ever, to secure any position, despite his several efforts to do so. For more than twenty years he supplemented the income derived from his writings by marking examination papers for the Royal Geographic Society and for the Indian Civil Engineering College. He was elected to the Royal Society thirty-one years after his return to England, having reluctantly accepted nomination by Hooker, the one surviving member of the triumvirate responsible for the

"trumpery affair". It is curious that Wallace's early companion, Bates, had been elected twelve years earlier, nominated by Charles Darwin. Bates certainly deserved the honour, but, equally certain, no more than Wallace.²⁶ Darwin did however achieve, in 1881, something for Wallace. It was not Darwin, or any of Darwin's scientific friends who first thought of doing so. It was a woman, Arabella Buckley, who had been secretary to Sir Charles Lyell. She drew Darwin's attention to the impoverished condition of Wallace and his family (his wife Annie, whom he had married in 1866, and two children) and suggested work should be found for him. Darwin conceived, instead, the idea of petitioning Gladstone for a Crown pension for Wallace. He needed support. Hooker advised against the project. Then, for once, Wallace helped his own cause. He published what is, perhaps, his greatest book, *Island Life*.²⁷ And he dedicated it to Hooker. Darwin wrote the testimonial, signatories were gathered, and Wallace was awarded a pension of £200 per annum. Darwin was delighted. He died one year later, with a nagging conscience partly expiated.



Wallace died in his ninety-first year in 1913, having remained active almost to

the end, He had written twenty books and more than seven hundred articles, and had, by then, received numerous honours. Within one of many obituaries, there is the remark, "Thinking of Wallace's happy, strenuous life, we are led to realize man's independence of wealth and circumstance, to know by his example that, if it be great enough, 'the mind is its own place,' and is 'not to be changed by place or time.'" ²⁸

I'll finish with another tribute paid to him, this soon after he had returned

from his labours in the Malay Archipelago, during which he had unknowingly instigated the "trumpery affair" and publication of the most significant book in the history of natural philosophy. Thomas Huxley wrote, "Once in a generation, a Wallace may be found physically, mentally, and morally qualified to wander unscathed through the tropical wilds of America and of Asia; to form magnificent collections as he wanders; and withal to think out sagaciously the conclusions suggested by his collections." ²⁹

Acknowledgement

I am grateful to Professor Charles H. Smith for reading the first copy of this essay and drawing my attention to matters now incorporated in Notes 17 and 26.

Notes

- ¹ Darwin, Charles. *The Foundation of the Origin of Species: Two Essays written in 1842 and 1842*, edited by Francis Darwin. London: Cambridge University Press, 1909.
- ² Wallace, Alfred Russel. *My Life: A record of Events and Opinions*. 2 vols. London: Chapman and Hall, 1905.
- ³ Wallace, 1905.
- ⁴ At the time in question I was suffering from a sharp attack of intermittent fever, and every day during the cold and succeeding hot fits had to lie down for several hours, during which time I had nothing to do but to think over any subjects then particularly interesting me. One day something brought to my recollection Malthus's "Principles of Population", which I had read about twelve years before. I thought of his clear exposition of "the positive checks to increase" -disease, accident, war, and famine - which keep down the population of savage races to so much a lower average than that of more civilised peoples. It then occurred to me that these causes or their equivalents are continually acting in the case of animals also; and as animals usually breed much more rapidly than does mankind, the destruction every year from these causes must be enormous to keep down the populations of each species, since they evidently do not increase regularly from year to year, as otherwise the world would long ago be densely crowded with those that breed most quickly. Vaguely thinking over the enormous and constant destruction which this implied, it occurred to me to ask the question, Why do some die and some live? And the answer was clearly, that on the whole the best fitted live. From the effects of disease the most healthy escaped; from enemies the strongest, the swiftest, or the most cunning; from famine the best hunters or those with the best digestion; and so on. Then it suddenly flashed upon me that this self-acting process

would necessarily improve the race, because the inferior would inevitably be killed off and the superior would remain - that is, the fittest would survive. Then at once I seemed to see the whole effect of this, that when changes of land and sea, or of climate, or of food supply, or of enemies occurred - and we know that such changes have always been taking place - and considering the amount of individual variation that in my experience as a collector had shown me to exist, then it followed that all the changes necessary for the adaptation of the species to the changing conditions would be brought about; and as great changes in environment are always slow, there would be ample time for the change to be effected by the survival of the best fitted in every generation. In this way every part of an animal's organization would be modified exactly as required, and in the very process of this modification the unmodified would die out, and thus the definite characters and the clear isolation of each new species would be explained. The more I thought it over the more I became convinced that I had at length found the long-sought-for law of nature that solved the problem of the origin of species. For the next hour I thought over the deficiencies in the theories of Lamarck and the author of *Vestiges*, and I saw that my new theory supplemented these views and obviated every important difficulty. I waited anxiously for the termination of my fit so that I might at once make notes for a paper on the subject. The same evening I did this pretty fully, and on the succeeding evenings wrote it out carefully in order to send it to Darwin by the next post, which would leave in a day or two (Wallace, 1905).

- ⁵ Moore, James. (1997) Wallace's Malthusian Moment: The Common Context Revisited, pp. 290-311 in Bernard Lightman, ed., *Victorian Science in Context*. Chicago: University of Chicago Press, 1997.
- ⁸ Wallace, Alfred Russel. *The Malay Archipelago: The Land of the Orang-utan and the Bird of Paradise, a Narrative of Travel with Studies of Man and Nature*. London: Macmillan, 1869.
- ⁷ Wallace, Alfred Russel. On the law which has regulated the introduction of new species. *Annals and Magazine of Natural History*, Vol. 16 (2nd. Series) (Sept. 1855), pp. 184-196.
- ⁸ May 1, 1856. This and, unless otherwise noted, all other extracts of correspondence from *The Correspondence of Charles Darwin*, edited by Frederic Burkhardt and Sydney Smith, Vols. 4 -7. Cambridge: Cambridge University Press, 1988 - 1991.
- ⁹ *Charles Darwin's Natural Selection*, ed. R.C.Stauffer. London: Cambridge University Press, 1975.
- ¹⁰ Darwin, Charles, and Alfred Russel Wallace. On the Tendency of Species to form Varieties; and on the Perpetuation of Varieties and Species by Natural Means of Selection. *Proc. Linnean Soc.*, Vol. 3 (1858), pp. 45-62.
- ¹¹ Wallace, Alfred Russel. Narrative of Search After Birds of Paradise, *Proceedings of the Zoological Society of London*, 1862, pp. 153-161.
- ¹² Wallace, 1869.
- ¹³ October 6, 1858. *Alfred Russel Wallace: Letters and Reminiscences*, ed. James Marchant. 2 vols. London: Cassell, 1916.

- ¹⁴ A remark made about Elie de Beaumont in inventing the phrase 'la science moussante' for Evolutionism. See Huxley, Thomas Henry, 'On the Reception of the *Origin of Species*' in *The Life and Letters of Charles Darwin* edited by his son, Francis Darwin, Vol. 2, London: John Murray, 1888. Cromwell was "damn'd to everlasting fame", wrote Alexander Pope in his *Essay on Man*.
- ¹⁵ *The Autobiography of Charles Darwin, 1809-1882, with original omissions restored*. Edited with Appendix and Notes by his grand-daughter Nora Barlow. London: Collins, 1958.
- ¹⁶ *The Darwin-Wallace celebration held on Thursday, 1st July, 1908 by the Linnean Society of London*. London: Printed for the Linnean Society, 1908.
- ¹⁷ But Charles H. Smith has pointed out, in Chapter II of *Alfred Russel Wallace: Evolution of an Evolutionist* (<http://www.wku.edu/~smithch/wallace/chsarwp.htm>), that Wallace several times drew attention to the fact that the essay had been published without his having had the opportunity to correct the proofs. For example, in 1869, in a letter to Adolf Bernhard Meyer, who had sought Wallace's permission to translate the essay into German, he wrote, "It was printed without my knowledge, and of course without any correction of proofs. I should, of course, like this fact to be stated." See *Nature*, Volume 52 (29 August, 1895), p. 415.
- ¹⁸ Beddall, Barbara G. Wallace, Darwin and the Theory of Natural Selection. *Journal of the History of Biology*, vol. 1 (1968), pp. 261-324. (This and Beddall, 1988, are amongst the most astute analyses of the interaction between Darwin and Wallace).
- ¹⁹ Wallace, Alfred Russel. *Darwinism: An Exposition of the Theory of Natural Selection with Some of its Applications*. London: Macmillan and Co., 1889.
- ²⁰ Brackman, Arnold C. *A Delicate Arrangement: The Strange Case of Charles Darwin and Alfred Russel Wallace*. New York: Times Books, 1980.
- ²¹ Beddall, 1968.
- ²² McKinney, H. Lewis. *Wallace and Natural Selection*. New Haven: Yale University Press, 1972.
- Brackman, 1980.
- Brooks, John Langdon. *Just before the Origin: Alfred Russel Wallace's Theory of Evolution*. New York: Columbia University Press, 1984.
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- ²³ Beddall, Barbara G. Darwin and Divergence: The Wallace Connection. *Journal of the History of Biology*, vol. 21, no. 1 (Spring, 1988), pp. 1-68.
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- ²⁴ Matthew, Patrick. *On Naval Timber and Arboriculture*. Edinburgh: Longman, 1831.
- ²⁵ Wallace, Alfred Russel. On the Zoological Geography of the Malay Archipelago [communicated by Charles Darwin to the LSL meeting of 3 Nov. 1859]. *Journal of the Proceedings of the Linnean Society: Zoology* 4 (1860), pp. 172-184.
- ²⁶ It seems that Wallace had resisted earlier attempts to nominate him. The following letter from George H. Darwin (Charles Darwin's son) to the Editor of *The Times* (London) was printed in the 7 June 1893 issue: "Sir,--The election of Mr. Alfred Russel Wallace to the Royal Society last week has been commented on in the public journals as showing the inefficiency of the method by which Fellows are elected. It seems, therefore, only just to the Royal Society to state that it is notorious that Mr. Wallace would have been elected at any time within the last 35 years if he had ever allowed himself to be nominated."
- ²⁷ Wallace, Alfred Russel. *Island Life: or, The Phenomenon and Causes of Insular Faunas and Floras, Including a Revision and Attempted Solution of the Problem of Geological Climates*. London: Macmillan and Co., 1880.
- ²⁸ Poulton, Edward B. *Zoologist* 17, 4th ser. (15 Dec. 1913), pp. 468-471.
- ²⁹ Huxley, Thomas H. *On the Natural History of the Man-like Apes in Evidence as to Man's Place in Nature*. London: Williams & Norgate, 1863.

Further Reading

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- Browne, Janet. Darwin's Botanical Arithmetic and the Principle of Divergence. *Journal of the History of Biology*, vol. 13, no. 1 (Spring, 1980), pp. 53-89.
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- Desmond, Adrian J., and James R. Moore. *Darwin*. London: Michael Joseph, 1991. (The best biography of Darwin until Browne's).
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Wilson, Leonard G., ed. *Sir Charles Lyell's Scientific Journals on the Species Question*. New Haven and London: Yale University Press, 1970.

Internet resources

The Complete works of Charles Darwin Online: <http://darwin-online.org.uk/>.

The Alfred Russel Wallace Page: <http://www.wku.edu/~smithch/index1.htm>. This admirable site, constructed by Charles H. Smith, is informative about every aspect of Wallace's life and work. It contains references to Smith's own Wallace-related writings

The Alfred Russel Wallace Website: <http://wallacefund.info/>. This, due to George Beccaloni, also contains a wealth of detail and commentary about Wallace, together with information about the "A. R. Wallace Memorial Fund".