

ALFRED RUSSEL WALLACE.
(1823-1913.)

By the death of Alfred Russel Wallace, which took place at Broadstone, near Wimborne, on November 7th, the last of the giants of English nineteenth-century science is removed. He was born, of Scottish ancestry, at Usk, Monmouthshire, January 8th, 1823; "educated" at Hertford Grammar School, which he left before he was fourteen; and apprenticed to an elder brother who was a land-surveyor. This employment was distasteful: his attention had already been turned towards Natural History, and, as in so many other cases, Humboldt's *Personal Narrative* had fired him with a desire to visit the Tropics. It is noteworthy that he began by collecting British plants, though he was eagerly reading books of travel, so that when, during a short time in 1844-5, when he was acting as a master in the Collegiate School at Leicester, he made the acquaintance of Bates, then already an ardent entomologist, it required but little encouragement to make him decide to start for America. He himself says (*Travels on the Amazon, Preface*):—"My attention was directed to Pará and the Amazon by Mr. Edwards's little book, *A Voyage up the Amazon*, and I decided upon going there, both on account of its easiness of access and the little that was known of it compared with most other parts of South America. I proposed to pay my expenses by making collections in Natural History, and I have been enabled to do so." Writing to Bates at the time, he expressly says that one of their objects must be the collection of facts "towards solving the problem of the origin of species"; but, although they were not then published, it must be remembered that Darwin had then not only received the initial suggestion of the theory of natural selection from reading Malthus on Population in 1838, but had, in June, 1842, and during the summer of 1844, written out the first and second abstracts of his theory.

Wallace and Bates sailed for Pará in April, 1848; and a year and a half later they were joined at Santarem by Spruce, another Collegiate School master, who, encouraged by Bentham and Hooker, and probably also, as Wallace suggests (Spruce, *Notes of a Botanist on the Amazon and Andes*, Introduction, p. xxxiii.), by what he heard from entomological friends at the British Museum of how successful Bates and Wallace had already been, had determined to undertake the botanical exploration of the region.

The three collectors separated, Wallace first ascending the Rio Negro to the Uaupés. In September, 1851, Spruce writes

from Manaós (then Barra do Rio Negro) to John Smith, the Curator at Kew, that Wallace had just come down from the frontier bringing sketches of several palms, many probably new. Three months later he informs the same correspondent that Wallace, who had started up the Rio Negro a month before Spruce had done so, was "almost at the point of death from a malignant fever," whilst his younger brother, Herbert Wallace, who had come out with Spruce, had succumbed in the previous May. Wallace, however, having fortunately sent home his first two years' collections, started for England at the end of July, 1852. The vessel in which he sailed took fire, and the bulk of the specimens he had with him, his sketches and notes, were destroyed. After drifting ten days in open boats, Wallace and the crew were picked up; but the voyage had lasted eighty-two days when he landed in England on October 18th, 1852.

In 1853 Wallace published his little book on the *Palms of the Amazon*, illustrated from his own sketches. Though useful at the time, it was practically superseded by Spruce's classical "Palmæ Amazonicæ" in the Linnean Society's *Journal*, vol. xi. (1870). The same year saw the publication of *Travels on the Amazon and Rio Negro*, Bates's *Naturalist on the Amazons* appearing in 1863, and Spruce's *Notes of a Botanist on the Amazon and Andes* (edited by Wallace) not till 1908. Wallace's journal abounds in botanical notes, and contains one brilliant chapter specially devoted to the vegetation of the Amazon Valley. Few passages in his writings are better known than the paragraphs in this chapter in which he contrasts the gloomy solemnity of the tropical forest with the brilliant colours of temperate landscapes.

In 1854 Wallace started once more for the Tropics, reaching Singapore in July, spending in all eight and a half years in the Malay Archipelago, and collecting in Sumatra, Java, Timor, Celebes, Borneo, and New Guinea. An essay, written at Sarawak in February, 1855, and published in the *Annals and Magazine of Natural History* for September, 1855, "On the Law which has regulated the introduction of new species," is even more important in the history of biogeography than in that of biogenesis. Though it attracted the attention of Lyell, Darwin, and Huxley, Wallace was disappointed to find that it obtained little general recognition. It was after reading Malthus's book, as Darwin had done just twenty years before, that Wallace, while prostrated with fever at Ternate in February, 1858, wrote the essay "On the tendency of varieties to depart indefinitely from the original type," which he sent to Darwin, and which was read, together with Darwin's chapter "On the variation of organic beings in a state of nature," on the momentous July 1st, 1858, at the Linnean Society. Everyone is familiar to-day with the story of the admirable magnanimity with which the two great naturalists recognized each other's work.

"I have felt all my life, and I still feel," writes Wallace in 1870, "the most sincere satisfaction that Mr. Darwin had been at

work long before me, and that it was not left for me to attempt to write *The Origin of Species*. I have long since measured my own strength, and know well that it would be quite unequal to that task." On the other hand, Darwin writes to Wallace:—"You are the only man I ever heard of who persistently does himself an injustice, and never demands justice."

In March, 1859, Wallace wrote to Dr. Sclater from Batchian accepting, with some suggested minor alterations, the six zoological provinces that Sclater has proposed; whilst another essay, written about the same time, "On the Zoological Geography of the Malay Archipelago," gives further details as to the boundary between the Indian and Australian regions that he located in Lombok Channel. Circumstances thus forced upon his attention the problems of the geographical distribution of animals, and both as collector and as writer he became a zoologist rather than a botanist.

The sale of his Malay collections brought him a small fortune, which, when invested, yielded a modest income for a single man; but in 1866 he married the daughter of William Mitten, the bryologist, by whom he had a son and a daughter; and his subsequent life in England was one of unremitting literary toil, at first in London and later at several successive country homes. The two fascinating descriptive volumes on *The Malay Archipelago*, published in 1869, were followed in 1876 by his *magnum opus*, the classical *Geographical Distribution of Animals*, which he himself described as an endeavour to do for the twelfth and thirteenth chapters of the *Origin of Species* what Darwin's own *Animals and Plants under Domestication* had done for the first chapter. *Island Life*, first published in 1880 and enlarged in the second edition of 1895, was supplementary to the main treatise, and had appended to it an elaborate treatment of the two subsidiary questions of the Glacial Period and the permanence of continents and ocean-basins. In this work there is a considerable amount of botanical matter. Profoundly influenced by the brilliant suggestions of Edward Forbes, Wallace was always impressed by the importance of geological history in dealing with the past and present distribution of land and water. He made much use of such considerations in modifying Croll's theory of the Glacial Period; and, though considered by a younger antagonistic school the champion of the permanence of continents and oceans, he constantly accepted very extensive distributional interchanges of land and water. *The World of Life*, one of his last works, deals with new evidence on the same questions.

In 1881 Wallace was granted a Civil List Pension: in 1882 the University of Dublin honoured itself by conferring upon him the degree of LL.D.; and other universities followed suit at later dates. From his receipt of the Royal Medal of the Royal Society in 1868 to the award of the first Darwin-Wallace Medal by the Linnean Society in 1908, Wallace's manifold services to biology have been fully recognized by his *confrères*; and he was naturally one of the earliest recipients of King Edward's Order of Merit.

This is not the place to deal with his many labours in various other fields, such as psychical research and land nationalization, nor can we do more than mention the valuable volume of essays *On Natural Selection* issued in 1875, and the popular exposition of the whole theory of evolution, as he understood it, in *Darwinism* (1889). While he differed from Darwin in his views as to the application of the theory to man, Wallace constantly asserted—even more strongly than Darwin himself had ever done—the sufficiency and controlling effect of natural selection, as opposed to the various post-Darwinian views on evolution.

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