

## DEATH OF DR. RUSSEL WALLACE.

### A VETERAN OF SCIENCE.

#### DARWIN AND THE ORIGIN OF SPECIES.

We regret to record that the veteran traveller and naturalist, Dr. A. R. Wallace, O.M., died at 9.25 yesterday morning at his residence in the Dorset village of Broadstone, seven miles from Bournemouth. He was in his 91st year. For the last 18 months his health had been exceedingly good, and only a fortnight ago he went for a few days to his cottage near Swanage. It was shortly after his return to Broadstone that he became ill.

#### EARLY LIFE.

Alfred Russel Wallace was born on January 8, 1823 (not 1822, as he himself believed for many years), at Usk, in Monmouthshire, and was educated at Hertford Grammar School. At an early age he began to assist in the business of an elder brother who was a land surveyor and architect. This circumstance had an important effect on the course of his life. In the first place, his business engagements took him to various parts of England and Wales; and the observations he made in the course of his journeys about the country persuaded him of the evils of the landlord system and engendered in him those opinions in favour of the State ownership of land which were expressed many years later in his book on "Land Nationalization: Its Necessity and Aims," published in 1882, and reiterated in his "Social Environment and Moral Progress," published only this autumn. In the second place, this elder brother was a man of advanced liberal and philosophical views; and through constant association with him Wallace soon lost the capacity of being affected in his judgments either by "clerical influence or religious prejudice."

He thus became a "confirmed philosophical sceptic," a thorough materialist, in whose mind there was no place for any conception of spiritual existence or of any other agencies in the universe than matter and force. But his curiosity being aroused by some inexplicable, though slight, phenomena that occurred in a friend's house, he began to make investigations, and thus came upon facts which he conceived to be "removed from anything that modern science taught or philosophy speculated upon." In this way he gradually arrived at a belief, expressed in "Miracles and Modern Spiritualism" (1881), in the existence of præterhuman intelligences of various grades, able to act on matter and to influence the minds of men, and was led to question the validity of the *a priori* arguments against the occurrence of miracles. Another instance of the heterodox and independent nature of his views is afforded by his "Vaccination a Delusion" (1898); and in "The Wonderful Century" (1898, republished in an enlarged form in 1903) the achievements of the 19th century that are singled out as successes or the reverse are not in all cases those which would be selected by the majority of people.

#### TRAVELS IN THE TROPICS.

About 1844, while he was a master at the Collegiate School at Leicester, he became acquainted with the naturalist H. W. Bates, whose father was a manufacturer in that town. Some years before he had already shown a marked taste for natural history and had begun to form a botanical collection; and the result of the acquaintance was that the two soon determined to make a natural history expedition to South America. The plan was not only to get specimens for their private collections, but also to obtain duplicates which could be sold and thus help to defray the expenses of their journey; in addition, Wallace at least had in his mind the definite intention of collecting "facts towards solving the problem of the origin of species."

Early in 1848 the explorers met in London; and after gaining some idea of the specimens of South American animals and plants then existing in this country, they embarked at Liverpool on April 20 in a small trading vessel, which reached the mouth of the Amazon a month later. For the first year or so they worked together; but subsequently they separated, Bates travelling some 1,400 miles up the Amazon, while Wallace explored the Rio Negro. After an absence of four

years the latter returned to England, landing at Deal in 1852; but on the voyage he suffered a severe misfortune, for, the ship taking fire, his notes and collections were lost, with the exception of some he had sent on beforehand, and he himself was ten days in an open boat. In 1853 he published an account of his expedition, "Travels on the Amazon and Rio Negro," and also a small book on "Palm Trees of the Amazon."

In the following year, having disposed of such specimens as had been saved, he started off for the Malay Archipelago. The main object of this journey also was to obtain specimens both for his own collections and for those of museums and amateurs. He was away from England eight years, and during that time travelled 14,000 miles within the Archipelago, visiting, among other countries, Sumatra, Java, Borneo, Celebes, the Moluccas, Timor, and New Guinea. The specimens he brought back numbered over 125,000, including 8,000 birds, 13,000 lepidoptera, 83,000 coleoptera, and 13,000 other insects. The examination and classification of this huge collection, some parts of which are now in the British Museum and some in the Hope collection at Oxford, was naturally a laborious undertaking; and thus it was that the two volumes on "The Malay Archipelago," containing an account of his travels, were not published till 1869.

Among other results of his investigations in the East he showed that an imaginary line passing between Borneo and Celebes, through the Strait of Macassar, and between Bali and Lombok, divides the Archipelago into two regions which have completely different zoological characteristics; in the islands lying to the west of "Wallace's Line" the flora and fauna are essentially Oriental, while in those lying to the east of it they are distinctively Australian, a prominent feature of this eastern region being a great number of marsupials but an almost complete absence of the mammalia that occur in other parts of the world. Wallace continued his studies in zoo-geography in his classical book, "The Geographical Distribution of Animals" (1876) and in "Island Life" (1880). The two journeys to the Amazon and Malaysia complete the tale of his tropical wanderings; but in later years he made various trips to the Continent, and in 1887-88 went to the United States and Canada, delivering a course of Lowell lectures at Boston.

#### WALLACE AND DARWIN.

Wallace was first introduced to Darwin, to whom "The Malay Archipelago" is dedicated, in 1854, in the Insect Room of the British Museum; but nothing of any great moment seems to have been said by either on that occasion. A few years later, however, Wallace was destined to cause considerable perturbation in the mind of the man who was to write the "Origin of Species." So far back as 1842 Darwin had written out an outline of the law of natural selection which in an enlarged form had been read by Sir Charles Lyell and Sir Joseph Hooker in 1844, though otherwise he does not appear to have spoken about it to anybody. At any rate, when Wallace, who had published in 1855 in the *Annals of Natural History* a paper on "The Law which has Regulated the Introduction of New Species," wrote to Darwin on the subject the

latter gave no hint of having arrived at any conclusion regarding the mode in which such a law operates; and in 1857 he even wrote to Wallace, "My work will not fix or settle anything." Yet in the beginning of 1856, at Lyell's instance, he had begun to write out his views on the "tendency in organic beings descended from the same stock to diverge in character as they become modified," and to expound his belief that the "modified offspring of all dominant and increasing forms tend to become adapted to many and highly diversified places in the economy of nature." He was therefore justifiably astonished, on June 18, 1858, to receive from Wallace, then in the Moluccas, an essay "On the Tendency of Varieties to depart indefinitely from the Original Type," in which his own theory was clearly expressed. The letter which Darwin sent to Lyell on the same day is worth quoting again:—

He [Wallace] has sent me the enclosed and 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 very briefly my view 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 now his terms stand as heads of my chapters.

The question of publishing this theory at once became urgent and also delicate; for while Darwin was excusably anxious to have the credit of originating the hypothesis, he was also anxious that Wallace should not be deprived of any honour that was due to him. Finally it was arranged that Lyell and Hooker should "communicate" to the Linnean Society a joint paper by Messrs. C. Darwin and A. Wallace, consisting of Wallace's essay and extracts from Darwin's sketch of 1844, together with part of a letter he had written to the American botanist, Asa Gray, in September, 1857. This was done on July 1, 1858. Fifty years later Wallace was present as the central figure in the celebration of the jubilee of this event, which was held by the Linnean Society in London in 1908.

In Wallace's contribution it was pointed out that in the "struggle for existence" those animals which prolong their existence can be only the most perfect in health and vigour, while the weakest and least perfectly organized must always succumb; and various examples of the operation of the law of natural selection were given—*e.g.*, that the giraffe acquired its long neck, not as Lamarck supposed by desiring to reach the foliage of more lofty shrubs and stretching its neck for the purpose, but because any varieties that occurred with longer necks than usual secured a fresh range of pasture over the same ground as their shorter-necked companions, and thus on the first scarcity of food were enabled to outlive them. The conception of this survival of the fittest came to Wallace in February, 1858, while he was living at Ternate, in the Moluccas, the idea "suddenly flashing" upon him as he lay suffering from a sharp attack of intermittent fever; and in three days he had written out an outline of the theory and posted it to Darwin. It is an interesting circumstance that the same book—Malthus's "Essay on Population"—which Darwin mentions as having given him a theory by which to work also supplied the stimulus that resulted in the idea of the survival of the fittest arising in Wallace's mind. One effect of this incident was that Darwin and Wallace became firm friends and frequent correspondents, although not actually seeing much of each other; and at Darwin's funeral in Westminster Abbey in 1882 Wallace was one of the pall-bearers.

His writings did much to promote the progress and understanding of Darwinian doctrine. The two essays of 1855 and 1858, mentioned above, were reprinted in 1870, together with several others on allied topics, in "Contributions to the Theory of Natural Selection," a volume which appealed to a wide circle of readers; and still later (1889) Wallace published "Darwinism," which also incorporates much of the teaching of Weismann. But he did not see eye to eye with Darwin in every respect. He held, for instance, that other forces besides natural selection have moulded

the development of the human race, and adopted views of a decidedly teleological character. In the "World of Life," published in 1910—a wonderful book to be written by a man in his 88th year—he gave clear expression to these views, arguing that the complexity of the structure of living things necessarily implies—(1) a creative power; (2) a directive mind; and (3) an ultimate purpose, which he conceived to be the development of man—"the one crowning product of the whole cosmic process of development." Another example of the anthropocentric tendency of his thought may be found in the support he lent to the hypothesis that this planet is the centre of the universe.

Wallace was awarded a Royal medal by the Royal Society in 1868 in recognition of his many "contributions to theoretical and practical zoology," and in 1890 he was very appropriately chosen as the first recipient of the Darwin medal, but it was not till 1893 that he was elected a Fellow of the Society. Other honours he received were the gold medal of the Geographical Society of Paris in 1870, the honorary degrees of LL.D. from Dublin in 1882 and D.C.L. from Oxford in 1889, and membership of the Order of Merit in 1908. He was president of the London Entomological Society in 1870-71, and of the biological section of the British Association at its meeting in Glasgow in 1876. In 1881 he was granted a Civil List pension of £200 a year. He published an autobiography, "My Life," in 1905, reissuing it in a condensed form in 1908. His most recent publications were "Social Environment and Moral Progress" and "The Revolt of Democracy," both of which appeared this year, the latter only a week or two ago.

In 1866 Wallace married Annie, eldest

daughter of the botanist William Mitten, of Hurstpierpoint, Sussex, who survives him, with a son and a daughter. In 1871 he built a house in an old chalk-pit at Grays, in Essex, where he lived for four years, moving subsequently first to Dorking and then to Croydon. In 1880 he built a cottage at Godalming, and grew nearly a thousand species of plants in his garden there. In 1889 he went to live in Dorset, at Broadstone, near Wimborne, where he has lived ever since.

### A PORTRAIT FUND.

It is only recently that a movement was set on foot for the presentation to the Royal Society of a portrait of Dr. Wallace, to be painted by Mr. J. Seymour Lucas, R.A. Professor Raphael Meldola, 6, Brunswick-square, W.C., Professor E. B. Poulton, Wykeham House, Oxford, and the manager, Union of London and Smiths Bank, Holborn-circus, had undertaken to receive subscriptions. Mr. James Marchant, Holborn Hall, W.C., was the hon. secretary. Already subscriptions had been received from Mr. Balfour, Lord Haldane, Sir Thomas Barlow, Sir David Ferrier, Sir W. Crookes, Professor G. C. Bourne, Mr. W. E. Darwin, Sir David Prain, Sir A. Geikie, Sir W. Osler, the President of Magdalen, and other eminent men. Subscribers of one guinea and upwards were to receive a reproduction of the portrait in photogravure, signed by the artist. The total expenses were estimated at £550.

We understand that the proposal will not be abandoned in consequence of Dr. Wallace's death. It will probably be arranged to have a posthumous portrait painted from a photograph.

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