



Alfred R. Wallace

A GREAT NATURALIST

ALFRED RUSSEL WALLACE, 1823-1913

By Henry Fairfield Osborn

THE nineteenth century in Great Britain, the Victorian Age, will be compared in history with the greatest intellectual periods in the history of Athens, of Rome and of Florence. Brilliant as were England's achievements in art, literature and the spreading of civilization, her achievements in science outshine them all. No country has ever produced such a constellation of stars of the first magnitude in the same brief period of time, especially in the sciences of geology and biology. The dominant figure of course is that of Darwin, whose influence upon the world of thought is to be compared with that of Aristotle only. Anticipating and surrounding Darwin were members of an unrivaled group of men, beginning with Sir Charles Lyell, a geologist, and including Sir Joseph Hooker, the botanist, Alfred Russel Wallace, the naturalist, and Thomas Henry Huxley, the anatomist and natural philosopher.

Wallace, the last survivor of this remarkable group, died on November 7, 1913, in the ninety-first year of his age and the sixty-fourth year of service and discovery. He followed by only a few months another member of the group, Sir Joseph Hooker, who was present at the Darwin celebration at Cambridge in 1909, the centenary of the birth of Darwin.

Because the fame of Wallace rests chiefly on his codiscovery with Darwin of the theory of natural selection he is sometimes thought of as Darwin's contemporary but he was actually fourteen years younger and made the discovery of natural selection twenty years later than Darwin. He was always the first to recognize Darwin's seniority and leadership. In his remarkable journeys in South America and in the Malay Archipelago, filling the years 1848 to 1862, Wallace was influenced by Darwin's classic work, best known as the *Voyage of the Beagle*.

The simultaneous publication of the law of natural selection independently discovered by these two great naturalists was followed on the part of Wallace by a lifetime of devotion to this chief principle of Darwin's special theories of the causes of evolution. While Huxley was the stalwart defender of the evolution theory and of Darwinism in general without committing himself to either of Darwin's special interpretations of the theory, Wallace devoted himself continuously to the support of Darwin's special hypotheses. Yet almost from the first he differed from Darwin in some very important particulars. He never could bring himself to believe that the mind and spirit of man were the results of the same evolution process as that which had developed his bodily structure and that of all the lower orders of animal

The half tone of Alfred Russel Wallace is used by courtesy of *Popular Science Monthly*

creation. As early as 1864 he advanced the hypothesis that so soon as man learned to use fire and make tools, to grow food, to domesticate animals, to use clothing, and to build habitations, the action of natural selection was diverted from his body to his mind and that thenceforth his bodily form remained comparatively stable while his mental faculties improved.

Five years later Wallace had definitely broken away from Darwin's conceptions with regard to natural selection and developed the opinion that this law is wholly inadequate to account for several of the bodily as well as psychical characteristics of man, such as his soft and sensitive skin, his speech, his color-sense and his mathematical, musical and moral attributes. He drew the inference from this class of phenomena, that a superior intelligence has guided the development of man in definite directions and for special purposes, just as man guides the development of many animal and vegetable forms.

Another striking divergence of the views of Wallace from those of Darwin related to the theory of the origin of the very striking differences which exist between males and females in many divisions of the animal kingdom. Darwin in his theory of sexual selection advanced the idea that the female was attracted by the brilliant and gaudy appearance of the males, as for example among birds, and that throughout the animal kingdom generally, beauty of coloring is especially characteristic of the males, is consciously perceived by females and thus selected. Wallace, on the other hand, sought to explain all the instances of brilliant and gaudy coloring on other principles. Thus in 1868 he propounded an original explanation of the quiet colors of nesting birds, pointing out that when the nest is exposed to view the female is always inconspicuous in coloring or imitative of its surroundings, while the male of the same species may be conspicuously or gaudily colored. Among other varieties of birds where both the sexes are conspicuously colored he noticed that the nest is such as to completely conceal the sitting bird.

Wallace specialized in the interpretation of the coloring of animals. He developed the theory of mimicry, or protective resemblance, the conception of which we owe chiefly to Bates and to Müller. One of his famous observations is that of mimicry in the leaf butterfly, which we find described in his delightful volume of 1869, the *Malay Archipelago*. In his own language his first observation of *Kallima paralekta* was as follows:

This species was not uncommon in dry woods and thickets, and I often endeavored to capture it without success, for after flying a short distance it would enter a bush among dry or dead leaves, and however carefully I crept up to the spot I could never discover it till it would suddenly start out again and then disappear in a similar place. At length I was fortunate enough to see the exact spot where the butterfly settled, and though I lost sight of it for some time, I at length discovered that it was close before my eyes, but that in its position of repose it so closely resembled a dead leaf

attached to a twig as almost certainly to deceive the eye even when gazing full upon it. I captured several specimens on the wing, and was able fully to understand the way in which this wonderful resemblance is produced. . . . All these varied details combine to produce a disguise that is so complete and marvelous as to astonish every one who observes it: and the habits of the insects are such as to utilize all these peculiarities, and render them available in such a manner as to remove all doubt of the purpose of this singular case of mimicry, which is undoubtedly a protection to the insect.

Another line in which Wallace ranks as one of the greatest naturalists is the geographic distribution of animals, beginning with his earliest observations in the *Malay Archipelago* of 1869 and closing with the publication of his charming book *Island Life*, which appeared in 1881.

Wallace like Darwin enjoyed the closing years of his life in the quiet surroundings of a beautiful English country home, and continued even to his ninety-first year to be a great force in the world's thought. His powers as a writer were prodigious and in rapid succession in his later years he brought out his volumes *My Life*, the *Wonderful Century*, the *World of Life*, and *Social Environment and Moral Progress*. In the *World of Life* he no longer believes in the Darwinian explanation of natural selection as adequate to account for the wonderful adaptations which we find in the animal world. He regards life as "a manifestation of creative power, directive mind and ultimate purpose." He thus returns in his later years to the teachings of his boyhood, to those which prevailed before the publication of the *Origin of Species*. His final creed is found in one of the closing paragraphs of the *World of Life* (p. 421):

In the present work I have endeavoured to suggest a reason which appeals to me as both a sufficient and an intelligible one: it is that this earth with its infinitude of life and beauty and mystery, and the universe in the midst of which we are placed, with its overwhelming immensities of suns and nebulae, of light and motion, are as they are, firstly, for the development of life culminating in man; secondly, as a vast school-house for the higher education of the human race in preparation for the enduring spiritual life to which it is destined.