

PASSING OF ONE OF THE SUPREME FIGURES IN MODERN SCIENCE

ONLY a great ruler could have been accorded by the press of the world any such elaborate obituary recognition as was evoked by the death of Alfred Russell Wallace, observes a student of his career in the *London Chronicle*. He had become conspicuous in the world's eye, like a Bismarck or a Gladstone. To Alfred Russell Wallace, equally with Charles Darwin, belonged the renown attending one who works some great social transformation or political upheaval, notes the *Paris Figaro*, because Wallace brought on a revolution no less truly than did Robespierre—a greater revolution than any, perhaps, since it was effected in the minds of men. The discovery of a great truth, such as the law of natural selection, is always followed by an over-valuation, as Doctor Henry Fairfield Osborn remarks in *The Popular Science Monthly*; and from this there is certain to be a reaction. We are in the midst of such a reaction at the present time, and hence the Darwin-Wallace theory of natural selection is less appreciated than it will be in the future, when there comes a fresh adjustment of scientific values.



AT THE HEIGHT OF HIS CAREER

Wallace explored far more remote domains of thought than mere zoology. He was at the head of the psychical research movement in 1878 when this portrait was made.

The prodigious age he had attained did not diminish the wonderful intellectual vigor of Wallace. Fantastic stories of his belief in ghosts circulated toward the close of his life, and it has been insinuated that he had fallen under the spell of mediums with all the credulity of the Russian Czar. He did attend séances, reporting some very weird experiences, if not actual beliefs. He was criticized by the materialists for his tendency to introduce an element of mysticism into his theorizing, but on that point Doctor Osborn has these reflections:

"It is well to remember that we may not estimate either the man of science or his conclusions as of our own period, but must project ourselves in imagination into the beginnings of his thought and into the travails of his mind, considering how much larger he was than the men about him, how far he was an innovator, breaking away from the traditions of his times, how far his direct observations apart from theory are true and permanent, and how far his theories have contributed to the great stream of biological thought. . . .

"We follow the cycle of his reflection beginning with 'adaptation' as the great mystery to be solved; in the middle and sanguine period of life, 'adaptation' is regarded as fully explained by natural selection; in the closing and conservative period of life 'adaptation' is again regarded in some of its phases as entirely beyond human powers of interpretation, not only in the evolution of the mental and spiritual nature of man, but in such marvelous manifestations as the scales of butterflies or the wings of birds.

"From our own intellectual experience we may sympathize with the rebound of maturity from the buoyant confidence of the young man of thirty-five, who finds in natural selection the entire solution of the problem of fitness which has vexed the mind and aroused the scientific curiosity of man since the time of Empedocles. We have ourselves experienced a loss of confidence with advancing years, an increasing humility in the face of transformations which become more and more mysterious the more we study them, altho we may not join with this master in his appeal to an organizing and directing supernatural principle. Younger men than Wallace, both among the zoologists and philosophers of our own time, are giving a somewhat similar metaphysical solution of the eternal problem of adaptation,

which still baffles and transcends our powers of experiment and of reasoning."

Nothing annoyed Wallace so much, we read in the *Paris Cosmos*, as the too popular impression that his theory of selection, or rather of the mode in which evolution acts, was complex and technical, and hence above the head of the average man. He prided himself upon being an average man and he always insisted that his writings on his specialty were intelligible to all. The claim, says our contemporary, was just. Thus, in his great contribution to modern thought, he pointed out that in the struggle for existence those animals which live longest must be those best equipped in regard to health and vigor. The weakest—that is, the least per-



THE PIONEERING ZOOLOGIST

In the year 1869 Wallace had attained his renown as a discoverer with Darwin of one of the fundamental truths of evolution.

fectly organized, considering the environment—must succumb. The giraffe, accordingly, acquired its long neck not, as Lamarck declared, by desiring to reach the foliage of loftier shrubs and stretching its cervical vertebrae for the purpose, but because a giraffe with an accidentally longer neck than usual secured a fresh range of pasture over the same ground occupied by its shorter-necked fellows. The

long-necked giraffe could therefore survive the short-necked at the first scarcity of provender. There was nothing in this theorizing that a plain man could not understand, as Wallace always insisted. He was conspicuous among those specialists who deprecated what Professor Hartog at the last meeting of the British Association called scientific "bluff." Science has become such a power that, as he feared, it has its dogmas and its pontiffs who sometimes presume upon the respect with which their conclusions are received by the laity. The assertion that there is a consensus of opinion among biologists which makes life only a form of chemical and physical action reproducible in the laboratory, is part and parcel of the scientific "bluff" against which Wallace protested. The great masters of scientific thought are at least divided on this subject, he reminded his pupils. On the other hand, Wallace was attacked for his alleged credulity as regards spiritualism. The restless, always creative and original intelligence which has passed from us could not remain quite satisfied with its early conclusions, as the London *Times* puts it, regarding the interpretation of the universe:

"The substance of certain of Wallace's later volumes was somewhat unlike the character of his earlier. He did not ap-

and with the many questions now put as to the sufficiency of the explanations offered by the theory of evolution. . . . A gulf has been dug between the old and the new almost as deep and wide as that separating pre-Copernican from post-Copernican astronomy. The thought which 'suddenly flashed' upon Wallace as he lay upon a sick-bed at Ternate—which had occurred independently and almost simultaneously to Darwin in accordance with that law of synchronism so often illustrated in science from the time of Leibnitz and Newton—has had effects far transcending events upon which the ordinary historian cares to dwell. It matters not that later investigators may think that Darwin and Wallace did not find the ultimate laws of descent and changes in life. They showed the way which has led to permanent results, and some not confined to physical science. Their speculations passed into and sank deep in the minds of men knowing, it may be, nothing of science, and, in the end, influenced their actions. The world at large, it may be said, talks much and often in the terms of Darwin and Wallace. In the early sixties their teaching might be a mere theory, of real interest only to a few; it has come to be among the driving forces of the world. Not only the teacher, the moralist, and the preacher, but even men of action have in thought, speech, and otherwise been affected by the doctrine of the selection of the fittest in one or other of its various forms."

Wallace was impatient of the recent work which centers around Mendelism and mutations, notes London *Nature*, but it was a fine example of his plasticity of mind that he entirely agreed with Weismann in finding the transmission of acquired characters unproved. His independence was conspicuously shown by the vigor with which he maintained his Darwinism, asserting, too, that the facts of man's higher nature compel us to postulate a special "spiritual reflex," comparable to that which intervened, he thought, when living organisms first appeared and when consciousness began. Throughout his life he was given to reflection over difficult problems far beyond the range of biology—in economics and astronomy, in psychology and politics. It was this width of interest, in part at least, which kept him young so long. Our scientific contemporary emphasizes these aspects of Wallace:

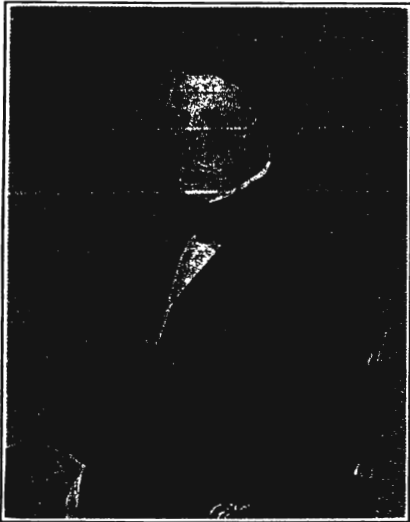
"He was the last distinguished representative of a type that can never be again—a combination of naturalist-traveler, biologist, and geographer, a knower of species, and yet from first to last a generalizer 'inquisitive about causes,' and, with all this, an investigator who stood outside any of the usual methods of analysis, with 'a positive distaste for all forms of anatomical and physiological experiment.' It will probably be a very long time before a biologist again rises to real distinction apart from experimental analysis in some form or other. . . .

"The building up of a science often reminds one of the waves making a new beach—multitudes of particular movements which are not in themselves permanent but make others of more lasting effect possible. Perhaps the same should be said of much that Wallace's fertile mind contributed, for instance, in regard to sexual selection, concerning which he was wisely sceptical, in regard to 'warning colors' and 'recognition marks,' in regard to the part played by instruction and imitation in the development of instinctive behavior; and many more instances might be given."

Many will doubtless be inclined to think, with the writer of the article in London *Nature*, that Wallace's views on Mendelism were a product of the intellectual rigidity of old age. The facts, to which numbers more might have been added, prove, however, observes another contributor to the same organ of science, that he retained his vitality and elasticity and keenness to a degree that was perfectly marvelous. With regard to Mendelism, he felt, as many far younger men feel, that it is both interesting and important, but that from the first it has been put in a wrong light, and erroneously used as a weapon of attack upon other subjects to which it is not in any way antagonistic.

His attitude toward "Mutation" was different; for here he knew that all the essential facts had been long pondered over by a greater mind than that of any living naturalist. Thus he wrote, July 27, 1907:

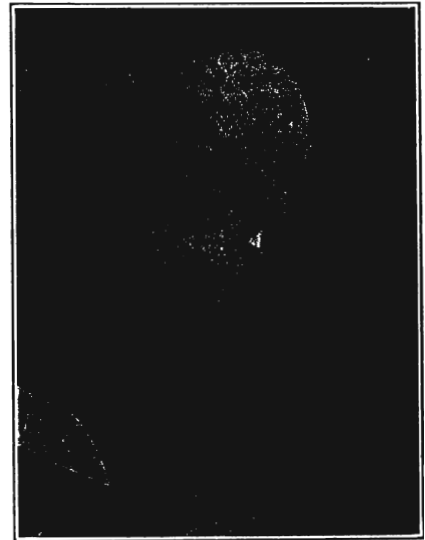
"Mutation as a theory is absolutely nothing new—only the assertion that new species originate *always* in sports—for which the evidence adduced is the most meagre and inconclusive of any ever set forth with such pretentious claims!"



THE GENERALIZER

Alfred Russell Wallace in 1848 was a student of natural history with no educational advantages and little prospects.

appear to find complete solutions in purely materialistic terms. He dwelt much, and impressively, upon old mysteries. He better understood, if he did not adopt, the old explanations. It is characteristic of Dr. Russell Wallace that he sought in his later days to go behind the formulæ which had once seemed final and to discover the deeper meanings of evolution. It is characteristic, too, that this movement or apparent change was in accordance with that going on, if not in biology, in philosophy,



THE HEROIC FIGURE IN SCIENCE

When this picture was taken in 1902 Alfred Russell Wallace was the acknowledged dean of the world's scientists, greater than any among them, not even excepting Haeckel, who confesses his great obligation to the Briton.