

## SCIENCE AND SPECULATION.

*The World of Life: a Manifestation of Creative Power, Directive Mind, and Ultimate Purpose.* By Dr. A. R. Wallace, F.R.S. Pp. xvi+408. (London: Chapman and Hall, Ltd., 1910.) Price 12s. 6d. net.

THE appearance of a new book written by the veteran naturalist in his eighty-eighth year cannot fail to arouse the interest of a wide circle of readers. The work may indeed be regarded as a recapitulation of the opinions on a great variety of topics which, during a long and active literary career, extending over more than fifty years, Dr. Alfred Russel Wallace has put forth in a number of memoirs, books, and magazine articles. But to regard the work as a mere summary of the results of former labours would be to do a great injustice to its author; for there is scarcely a subject referred to in it, in which fresh facts, novel lines of reasoning, or suggestive conclusions are not presented for our consideration.

The book naturally divides itself into two portions, which are of very diverse character and unequal value and importance. As regards the first part, we must state at once that the space at our disposal is altogether insufficient to enumerate—much less to discuss—the numerous interesting problems suggested in it.

After a first chapter, devoted to a somewhat academical discussion of the nature and origin of life, we have five chapters treating on the subject with which Dr. Wallace's name will always be so honourably associated—the distribution of plants and animals. Readers familiar with the author's great work on this subject, and with his "Island Life," will be surprised and delighted to find how many

novel facts and lines of treatment have suggested themselves to the author since the publication of his earlier works. Among many interesting discussions in this part of the book we may specially instance the contrasts pointed out between the more uniform floras of temperate climes and the richly diversified floras of tropical lands. These latter are shown in many cases to be in great danger of extinction through human agencies, and the interesting suggestion is made that the British Government might follow the example of the Dutch in Java, by establishing small forest reserves in our tropical colonies; such reserves, Dr. Wallace points out, need not be of anything like the extent of the animal reservations of North America and Africa, for, owing to the crowded and diversified nature of all parts of a tropical forest, small areas of even a square mile would be sufficient for the purpose.

Later chapters devoted to illustrations, extensions, and new applications of the theory of natural selection cannot fail to arrest the attention of all naturalists; we may especially refer to the discussion of "recognition marks," and those on bird life, bird migration and extinction, and the relations of bird to insect life. We may note that even when the author feels compelled to express dissent from the views of Darwin—as in his ideas concerning the origin of man's intellectual and moral faculties—we find his loyalty and devotion to his old friend and fellow-worker displayed as conspicuously as ever.

The three chapters on the geological record, well illustrated as they are by wood-cuts drawn from various sources, abound with interesting observations. We may instance his development of the ideas put forward by Dr. Smith Woodward, in an address to the British Association, concerning the tendency of groups of animals in the periods before their final extinction to run into extravagant and sometimes *bizarre* forms. This is illustrated in the case of the trilobites and ammonites.

Later chapters on the relations of the chemical elements to vital agencies, on the "mystery of the cell," on the parts played by plants, animals, and man respectively in the economy of nature, are eloquent and illuminating; but it is unfortunate that the author is never able to avoid the pitfalls of teleological speculation. This tendency is still more strikingly manifested when the author proceeds to discuss such questions as the existence of pain in the lower animals, of the non-justifiability of vivisection, of the remedies for the overcrowding of cities, and similar problems of the day. On all these and similar questions Dr. Wallace writes very confidently, sometimes intruding his speculative opinions in the midst of the treatment of purely scientific questions.

Most of the author's scientific friends—and they are very numerous—will feel regret that these and similar discussions were not reserved for a separate volume. We are all familiar, from reading his "Man's Place in the Universe," and his autobiographical work—"My Life"—with the author's peculiar views on extra-scientific, social, and political questions. Some of these tendencies to unbridled speculation seem to have reached an extreme limit in the twilight of a noble life, as when it is gravely suggested to sub-

stitute for the idea of a single Creator, orders of angelic beings, each charged with the task of originating and exercising supervision and control over special evolutionary processes! Everyone must feel how incongruous are such incursions into the realms of the unknown and the unknowable with the really valuable and suggestive discussions of the first part of the book. But however much we may regret the intrusion by the author of these wild speculations, and greatly as we may dissent from his social and political panaceas, as hopelessly impracticable, we all recognise that they are inspired by the author's love of humanity and all living things, by a desire to ameliorate the sorrows and sufferings he sees around him, and by a hope—ill-founded though it may be—that such teachings may be of service to his fellow-men.