

## LITERATURE.

## WALLACE'S ISLAND LIFE.

THE present work—*Island Life, or the Phenomena and Causes of Insular Faunas and Floras*, including a revision and attempted solution of the problems of geological climates, by Alfred Russel Wallace, London; Macmillan, 1880. 8mo., pp. 526—is the logical outcome of the previous studies of its distinguished author, a preliminary glance at which is necessary to its full appreciation. Beginning his more strictly scientific publications as far back as the year 1855, with an essay on the law which has governed the introduction of new species, Mr. Wallace was the first to point out certain striking facts which indicate that every species, at the moment of its appearance, coincides in time and space with the other preëxisting species which are closely allied to it. The fundamental problem, the “mystery of mysteries”—as Humboldt called it—of the cause which determines the formation of species, he did not grapple with until 1858, when he wrote at Ternate in the Malay Archipelago a second memoir on the tendency of varieties to depart indefinitely from their original type. Desiring to submit it to the judgment of Sir Charles Lyell, he sent his manuscript to Charles Darwin, begging him to bring it to the notice of that celebrated geologist. It is easy to imagine the feelings of Professor Darwin when he found brought together in this work, in the clearest and most precise manner, sometimes with technical expressions he had himself employed, all the ideas which had occupied his own mind for twenty years, as well as the theory which he had never communicated, save to a few friends. We may fancy him for a moment in dread lest he should lose the fruit of labors as protracted as they were conscientious. But, happily for him, Lyell and Hooker had been kept informed of his researches as they progressed, and, thanks to these mutual friends, the rights of the two discoverers were equally respected. An essay prepared expressly by Darwin, and that which Mr. Wallace had already forwarded were read at the same meeting of the Linnean Society and inserted in the same volume of its transactions.

While men of science were thus aware of the equal claim of the younger naturalist to the discovery of a principle destined to revolutionize the study of natural history, Mr. Wallace himself kept modestly in the back ground; and it was not until 1870 that he favored the world, in his “Contributions to the theory of Natural Selection,” with a popular presentation of his ideas on that subject. They do not differ in substance from those of Professor Darwin, but he does not offer them as the only key to the problem of the origin of species. Mr. Wallace is far from thinking, for example, as Darwin does, that the law of the survival of the fittest is sufficient to have evolved man as he exists to-day, from the inferior animals. Natural selection, he contends, could never have drawn from an ancestor covered with hair the naked body of man as we know him, for such a modification, far from being useful, would be hurtful, at least in certain respects. Mr. Wallace insists, also, on the impossibility of explaining the development of the moral sense in the savage by considerations drawn from utility, whether individual or collective, and from this he draws the inference that a superior intelligence has guided the development of man in a particular direction and in special ways, exactly as man himself regulates the modification of a great number of animal and vegetable forms. In making this notable exception to the sufficiency of the Darwinian theory, Mr. Wallace shows an independence as unusual in a man of science as that exhibited by the theologian—President McCosh for example—who accepts in principle the doctrine of evolution.

Not less strikingly original was Mr. Wallace's monumental work, the *Geographical Distribution of Animals*, in which, taking Natural Selection for granted, he gives the first connected sketch of the relation of extinct Mammalia to the distribution of living groups. In this painstaking work, laying all the different branches of natural science under contribution, he shows that the Northern Hemisphere was the birth-place of the class, and probably of all the orders of animals which give suck. Also, that at a very early period the land communication with Australia was cut off, and has never been renewed; so that we have there preserved for us a sample of one or more of the most ancient forms of Mammals. Somewhat later in the geologic periods, Mr. Wallace thinks, the union of the Northern Hemisphere with South America and South Africa was severed; so that in both these countries we have samples of a more advanced stage of mammalian development than that which is characteristic of Australia. Later still, the union by a northern route between the Eastern and Western Hemispheres is shown to have been broken, partly by a physical separation, but mainly by a lowering of temperature. The rise of the Himalayas and the formation of the great desert belts of the Sahara, Arabia, Persia and Central Asia, completed the separation between the temperate and tropical zones, and rendered further intermigration almost impossible.

In concluding this admirable work, the high-water mark of science up to the time of its publication on the subject of the geographical distribution of animals—just as De Candolle's *Géographie Botanique* is on the distribution of plants—Mr. Wallace suggested that the curious relations between animal forms and their habits, could most conveniently be studied in the productions of Islands as compared with each other, or with the continents of which they form appendages; and in the work before us he has practically shown how fruitful that conception is. *Island Life*, he says, “is the result of four

years additional thought and research on the lines laid down in my Geographical Distribution of Animals, and may be considered as a popular supplement to and completion of that work. The plan of my larger work required that *genera* only should be taken account of; in the present volume I often discuss the distribution of species, and this will help to render the work more intelligible to the unscientific reader." Nearly one half of the volume is taken up in the establishment of a number of doctrines or principles, which lead to a simpler and more complete solution of the problems in the geographical distribution of animals than has ever before been given to the world. The most important of these doctrines are those which establish and define the former wide extension of all groups now discontinuous, as being a necessary result of evolution; the permanence of the great features of the distribution of land and water on the earth's surface; and the nature and frequency of climatal changes throughout geological time. The last subject is handled in a masterly manner, the phenomena of the glacial period being attributed to geographical rather than to astronomical causes, although the latter are given a certain weight.

Part second of *Island Life* treats of insular fauna and flora, the author taking up in turn what he calls the Oceanic Islands, or those which have always been detached from the mainland, and the Continental Islands, or those which, by some convulsive or other action of nature, have been separated in early or more recent times from *terra firma*. In each group the facts established are shown to be necessary results of the law of evolution, and the grand survey of the history of life on our globe leaves the impression on the reader's mind of the complete inter-dependence of organic and inorganic nature. "We are thus encouraged to study more completely every detail and every anomaly in the distribution of living things, in the firm conviction, that by so doing, we shall obtain a fuller and clearer insight into the course of nature, and with increased confidence that the mighty maze of being we see everywhere around us is not without a plan."

In reviewing the labors of one who stands in the front rank of living naturalists, the contrast between the tone of his books, and that of those written by his equally distinguished contemporaries Darwin and Hæckel, is very marked. All three are evolutionists; but while Darwin stretches his theory to cover more facts than it will explain, and Hæckel evolves his missing links from his interior consciousness, Wallace is content to look nature in the face, and to learn just what she teaches and no more. He concerns himself, for example, but little with those theories of progress which occupy so large a place in the systems of modern men of science. Modest to the point of self-abnegation, his courage is shown no less by his recognition—exceptional among men of science—of an intelligent Cause, than by his paradoxical work on *Miracles and Modern Spiritualism*. In point of style he is lucidity itself, and it is not necessary to be a naturalist to enjoy his *Travels on the Amazon*; his *Palm Trees of the Amazon*; his *Malay Archipelago*, and his *Tropical Nature*, in each of which he shows his own grasp of his subject by the clearness with which he explains it to the ordinary reader. A similar thread of doctrine runs through all the productions of his pen, but his *Island Life* may be considered as a crowning proof that natural selection, though not the only, is one true cause of the existing diversity of animal life upon the globe.

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