

The World of Life

WHAT Dr. Wallace has to say on the laws of life and evolution is of so much weight that the present volume must attract great attention. He is not only one of the original protagonists of the doctrine of evolution, but it has interested him to study the bearing of it on the whole question of religious faith and theism. He is no materialist like Haeckel, and he is no agnostic like Huxley, nor does he avoid the conclusions like Darwin. He puts his faith positively into the title of his book, and finds in the organic life "a manifestation of creative power, directive mind and ultimate purpose." *The World of Life** is an argument to prove this conclusion from animal and vegetable life.

Fully two-thirds of the work is devoted to the workings of evolution under the principles earlier laid down by Darwin and himself. He still holds to the gradual processes of change under the survival of the fittest which account mainly for the production of the present forms of life. He has little faith in spontaneous appearances of new forms; and the notion of rapid changes under Mendelian development does not approve itself to him. In a most interesting way, and with more than a hundred illustrations, he treats of the floras and faunas of the world, of variation of forms and the laws of increase, of coloration of birds and insects for protection or recognition, and of the geological changes which in past ages have been active agents in hastening the production of new forms of life.

All this is developed with a view to the main purpose of the book, which is really theistic. At present it is the physicists and biologists, rather than the professional theologians, to whom one must look for the defense of natural theology, and Dr. Wallace is one of the chief of these. No theologian can afford to fail reading this book. Natural theology

must base itself on nature, and to students of nature they must go. As in the Middle Ages every physician was said to be an unbeliever, so for many years it has been thought that the student of nature had got rid of God. But there have always been, from the beginning of Darwinism, stout defenders of theism, such men as Hugh Miller, James D. Dana and Asa Gray. There came a wave of unbelief, or agnosticism, with Huxley and Spencer, and concluding with Haeckel, but the tide has now turned; and Dr. Wallace has never been of their number.

The seven last chapters are given to elucidating what is the real purpose of the work. The argument is, that in all the processes of life and evolution there has been not only the action of mere chemical forces, but also a constant directive impulse which has guided growth in the individual plant or animal, and in its progressive development. He finds in the sudden appearance in nature of the feathered wings of the primitive bird, so different from the reptile from which it sprung, adapted to a different life, so wonderfully fitted for movement in the air, a proof of some directive force, which we may call God. Equally he takes the case of the transformation of the insect. It is a worm, feeding on leaves. It becomes stationary as a chrysalis, and then all its parts dissolve into a pulp; then this pulp begins to produce an entirely different kind of a creature, a butterfly with gauzy wings and glorious colors, which no longer creeps but flies. In this transformation he sees some directive power which is not of itself, nothing chemical, and which guides it. He takes the same course of reasoning with the protoplasm of the cell, shows its amazingly complicated chemical constitution, and asks how these various atoms were led to combine in such a definite way. He insists that this is not the effect of the mere attractions of atoms or molecules for each other, but that there is also a real vital principle which we call life, and that some intelligent power must have guided all these

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processes. He complains that biologists have been content to note the successive movements and changes, as in the fertilization and development of the cell of an egg, but have stopped there, and have not asked what made these atoms start off in new directions and create new organs. Why out of the common and identical blood do there start to grow in the spring the enormous horns of the stag, or why when the bird moults do the elements in the blood hurry off to build new feathers, just the right one in the right place, strong wing feathers, soft feathers for warmth, and the feathers on the two sides just matching each other in shape, size and color? There is some directive force, very wise, absolutely constant and universal. Dr. Wallace stoutly resents the contempt of materialistically monistic biologists, who can see in all this mere chemical atoms acting in their own way, and he discovers above them the spiritual directive intelligence of God. Further than this, he does not hesitate at length to argue that man is the crown of the kingdoms of life, and that all this directive impulse was meant to look forward to him, and that animals and plants are provided for his comfort, and that suffering and death itself are part of a wise purpose. These chapters are very suggestive.

We would add that the vigor, the breadth of knowledge, and occasionally the consummate force of Dr. Wallace's style, contemporary as he is of Darwin, are more than one could expect from a man in his eighty-ninth year. Mind is not all matter.