

*Darwinism, an Exposition of the Theory of Natural Selection, with some of its applications, by Alfred Russel Wallace. Macmillan. 1889.*

When the unscientific reader finds in magazines and reviews a number of articles directed now against one point and now against another of a scientific theory, he naturally begins to conclude that the maintenance of that theory may be a failing cause. This has been the case with the theory of the Origin of Species through Natural Selection, and it is well that Mr. Wallace should, at the present time, have restated the leading points of that theory, and have shown the weakness of the arguments against it. He has carried out his object in a work of the most admirable lucidity, and his book may be confidently recommended as a charming one to the general reader. So many new facts and arguments have been discovered since the publication of the Origin of Species that the work should also be studied by the scientific specialist.

Mr. Wallace keeps his own personality much in the background, and a reader, unacquainted with the fact that the theory of Natural Selection was first announced in simultaneous papers by him and Mr. Darwin, might be pardoned if he failed to discover that this book is written by a partner with Mr. Darwin in that honour. We would suggest to any one who is tempted to engage in that hateful form of controversy—the *Priorität Frage*—that he should consider whether it is not true that both of these two authors have gained in fame by their mutual willingness to cede to the other.

We are apt to regard as terrible and cruel the fact that millions of battles for life and death are going on around us at every instant. But Mr. Wallace points out in an eloquent passage that this is an erroneous view, and indeed the very reverse of the truth. The struggle secures, he says, "the maximum of life and of the enjoyment of life with the minimum of suffering and pain." Mr. Darwin, too, has said that "we may console ourselves with the full belief that the war of nature is not incessant, that no fear is felt, that death is generally prompt, and that the vigorous, the healthy, and the happy survive and multiply."

It has often been alleged that Natural Selection cannot have produced the great effects attributed to it because the variations of animals are small, and that the benefit derivable from a minute variation must be too infinitesimal to decide, except rarely, the fate of life or death. The third chapter contains a striking discussion, in which it is shown that this criticism is based on an assumed view of the facts of nature, which is exactly contrary to the truth. The variability, indeed, is large, not only amongst domestic animals, but also in a state of nature. A number of diagrams are given, which bring this far more vividly before the mind than would columns of figures.

The sterility, either total or partial, of crosses between allied species has been felt to demand explanation. It is impossible that the sterility of an individual can prove of direct advantage to himself, and Mr. Darwin concluded that sterility in such crosses must have been brought about by causes other than the action of Natural Selection; the cause he adduced himself was physiological. But Mr. Wallace now brings forward an ingenious explanation of the manner in which a variety, which is partially sterile with its congeners, might gain an advantage in the struggle for life. We suspect, however, that men of science will hardly be willing to accept his explanation as a sufficient one.

The use of colour in animals is a subject to which Mr. Wallace has devoted much attention, and the chapter on this is amongst the most original in the book. A sportsman, who reads this portion alone, will be furnished with much matter for intelligent observation. For example, it might be supposed that the brilliant white tail of the rabbit would afford a conspicuous mark for beasts of prey, but Mr. Wallace points out that rabbits feed in the dusk, and that the white tail serves as a danger signal to his brothers.

The chapter on the beauty of the males of birds appears to us the weakest portion in the book. Mr. Darwin attributed the beauty of the peacock's tail, for example, to the selection by the female of the most brilliant male. It is not improbable that if Mr. Darwin were alive to-day he might be ready to admit that he had pushed his argument too far in some cases. But when Mr. Wallace totally denies a sense of beauty in animals, and attributes the growth of these marvellously special and beautiful developments to superabundant vital energy, we think that his argument falls below the level of what can be called an explanation, and savours rather of Mr. Square and "the eternal fitness of things."

The geographical distribution of animals is a field which the author has made especially his own, and the result is a chapter of profound interest.

In an account of the discoveries of fossil animals we are in the fairly land of science. In most cases the record is very imperfect, but occasionally the succession of forms is nearly complete. Thus

the pedigree of the horse (discovered since the publication of the "Origin of Species") begins with the four-toed *Eohippus*, only as large as a cat, and ends with the Newmarket thoroughbred and the brewer's drayhorse. The lizards of old are amongst the most marvellous revelations of science. Let the reader picture to himself, if he can, the gigantic *Atlantosaurus*, sixty feet long and standing thirty feet high. Then, too, the birds with teeth and with claws on their wings, serve to indicate the connection between the tribes of birds and lizards. Much as is now known, all this is clearly but the beginning, for Thibet and China and nearly all Africa are as yet unexplored. The final chapters on man are deeply interesting, but Mr. Wallace's suggestions and views as to the origin of the higher faculties—moral sense, music, art, mathematical power—deeply interesting as they are, barely fall within the realms of science.