

DIFFERENCES BETWEEN DARWIN AND WALLACE

The fact is well known that the theory of evolution as developed by Darwin was discovered independently and almost simultaneously by Alfred Russel Wallace. The latter, in the course of his newly issued biography,* complains that his differences of opinion with Darwin are so construed as to imply that he has now abandoned the most essential parts of the theory of natural selection. This, he says, is far from being the case. He proceeds to enumerate these differences and to explain their significance, as it appears to him. First and foremost among his conflicts of theory with Darwin he places that relating to the origin of man as an intellectual and moral being. On this topic Dr. Wallace states:

"The belief and teaching of Darwin was that man's whole nature—physical, mental, intellectual and moral—was developed from the lower animals by means of the same laws of variation and survival; and, as a consequence of this belief, that there was no difference in *kind* between man's nature and animal nature, but only one of degree. My view, on the other hand, was and is that there is a difference in kind, intellectually and morally, between man and other animals; and that while his body was undoubtedly developed by the continuous modification of some ancestral animal form, some different agency, analogous to that which first produced organic life, and then originated consciousness, came into play in order to develop the higher intellectual and spiritual nature of man. . . .

"These views caused much distress of mind to Darwin, but they do not in the least affect the general doctrine of natural selection. It might be

*MY LIFE. By Alfred Russel Wallace. Two volumes. New York, Dodd, Mead & Company.

as well argued that because man has produced the pouter pigeon, the bulldog and the dray horse, none of which could have been produced by natural selection alone, therefore the agency of natural selection is weakened or disproved. Neither, I urge, is it weakened or disproved if my theory of the origin of man is the true one."

The next most important conflict of views between these eminent scientists related to the subject of sexual selection through female choice. Darwin's theory of sexual selection, Dr. Wallace observes, consists of two quite distinct parts—the combats of males, so common among polygamous animals and birds, and the choice of more musical or more ornamental male birds by the females. The first, he says, is an observed fact, and the development of weapons such as horns, canine teeth, spurs, etc., is a result of natural selection acting through such combats. The second is an inference from observed facts and "an inference supported by singularly little evidence." The first he still holds as strongly as Darwin himself. The latter he at first accepted; but he soon came to doubt the possibility of such an explanation, at first from considering the fact that in butterflies sexual differences are as strongly marked as in birds, and it was to him impossible to accept female choice in their case. As the whole question of color came to be better understood he saw equally valid reasons for the total rejection of the theory even as to birds and mammalia.

The presence of arctic plants in the southern hemisphere and on isolated mountain tops within the tropics developed the third difference of standpoint between these brethren in

an identical field. Darwin accounted for the phenomena by a cooling of the tropical lowlands of the whole earth during the glacial period to such an extent as to allow large numbers of north temperate and arctic plants to spread across the continents to the southern hemispheres, and as the cold passed away to ascend to the summits of isolated tropical mountains. Dr. Wallace says of this view :

"The difficulties in the way of Darwin's view are twofold. First, that of lowering temperature of inter-tropical lowlands to the required extent would inevitably have destroyed much of the overwhelming luxuriances and variety of plant, insect and bird life that characterize those regions. This has so impressed myself, Bates, and others familiar with the tropics as to render the idea wholly inconceivable; and the only reason why Darwin did not feel this appears to be that he really knew nothing personally of the tropics beyond a few days at Bahia and Rio, and could have had no conception of its wonderfully rich and highly specialized fauna and flora. In the second place, even if a sufficient lowering of temperature had occurred during the ice age, it would not account for the facts, which involve, as Sir Joseph Hooker remarks, 'a continuous current of vegetation from north to south,' going much further back than the glacial period, because it has led to the transmission not of existing species only, but of distinct representative species, and even distinct genera, showing that the process must have been going on long before the cold period.

The reason why Darwin was unaffected by these various difficulties may perhaps be found in the circumstance that he had held his views for so many years almost unchallenged."

Pangenesis and the transmission by heredity of acquired characters were subjects regarding which debate between Darwin and Wallace was keen. Says Wallace now :

"Darwin always believed in the inheritance of acquired characters, such as the effects of use and disuse of organs and of climate, food, etc., on the individual, as did almost every naturalist, and his theory of pangenesis was invented to explain this among other effects of heredity. I therefore accepted pangenesis at first, because I have always felt it a relief (as did Darwin) to have *some* hypothesis, however provisional and improbable, that would serve to explain the facts; and I told him that 'I shall never be able to give it up till a better one supplies its place.' I never imagined that it could be directly disproved, but Mr. F. Galton's experiments of transfusing a large quantity of the blood of rabbits into other individuals of quite different breeds, and afterwards finding that the progeny was not in the slightest degree altered, did seem to me to be very nearly a disproof, although Darwin did not accept it as such. But when, at a much later period, Dr. Weismann showed that there is actually no valid evidence for the transmission of such characters, and when he further set forth a mass of evidence in support of his theory of the continuity of the germ-plasm, the 'better theory' was found, and I finally gave up pangenesis as untenable."