

### Sexual Colouration of Birds.

THE recent controversy in your columns with regard to the non-inheritance of acquired characters opens up the question whether the principle of natural selection operates universally in the animal kingdom, or whether we must involve other causes to supplement it. In Dr. Hurst's letter of August 17 (p. 368) is a sentence which seems to embody what has generally been understood as Darwinism: "If anything has ever been rendered certain in biology by prolonged experiment and observation, it is the fact that specific characters are maintained constant by selection, and that alone." But how does this agree with Dr. Wallace's theory of accessory plumes? This theory he himself thus expresses ("Darwinism," p. 293): "The fact that they have been developed to such an extent in a few species is an indication of such perfect adaptation to the conditions of existence, such complete success in the battle for life, that there is in the adult male, at all events, a surplus of strength, vitality, and growth-power which is able to expand itself in this way without injury." Here we have two entirely different views of what is meant by the struggle for existence. According to Dr. Hurst it is incessant; let its operation cease, and the characters of the species become speedily obliterated. According to Dr. Wallace a victorious species may leave the arena, and rest upon its laurels. But if natural selection ceases to work in this field, why not in others? The colours, it is true, may be due merely to waste products turned to account, but the annual growth of the peacock's plumes—often nearly five feet in length—must require a great expenditure of vital force.

In Brown's "Thier-reich" it is stated that even in ordinary cases moulting is not unaccompanied with danger to the bird. And this is not all: the secondary wing feathers of the argus pheasant are developed to such an extent that they are said "almost entirely to deprive the bird of flight" ("Descent of Man," vol. ii. p. 97). The theory by which Darwin himself accounted for these phenomena, viz. that the female selected the most brilliantly coloured male as her partner, explained the facts, but failed for want of sufficient evidence that any such selection took place. I cannot think that the two forms of sexual selection, by battle and by female preference, conflict, since the hen bird might well admire the combination of fine plumes and warlike prowess.

There is, besides, Mr. Stolzmann's theory that it is to the advantage of the species that the number of males should be kept down, since bachelor males persecute the hen bird upon the nest. This assumes what is not well proved, that males largely outnumber females. But a very large proportion of the species in which the cock-bird is highly decorated are polygamous, and in these cases the number of males is obviously excessive. Mr. Stolzmann's theory in no way conflicts with Darwin's, but rather supplements it. Moreover, it is hardly more than an extension of Dr. Wallace's view that the dullness of the female's plumage is due to her need of protection, which in the case of the male is less necessary. Both Darwin's theory and Mr. Stolzmann's require further evidence, but they each have the merit of suggesting a cause for the constancy of the same plumage through successive generations.

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