

natural selection by insects, because the spots and streaks of flowers are much less sharply defined.

2. Why is ornamental colouring, as a rule, confined to the male? If the love of beauty is an animal instinct, why, on Darwinian principles, is not beauty developed in the females, the most beautiful females being the most likely to obtain mates and leave offspring? I speak chiefly of birds.

3. Is there any reason to believe that the female has any choice or power of selection whatever? I think that what evidence we have goes to prove that she is passive: and certainly this opinion is supported by the very general fact of the males fighting for the possession of the females.

If the love of beauty is an animal instinct, then Darwinian principles would require that the struggles of the males for the possession of the most beautiful females should develop beauty in the females by natural selection. But we see that the contrary is what takes place—beauty is developed in the male, the fighting sex.

Were a Darwin among birds to watch the ways of the human race, he would probably feel certain that the love of dress and ornament among women is altogether due to a desire to become attractive to men; and he would think those naturalists unsatisfactory, and perhaps mystical, who guessed the truth, that the love of ornament is a natural and healthy human instinct, not confined to either sex or to any age, but stronger in youth than in age, and stronger in woman than in man.

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Psychology of Cruelty

THERE is a passage in Mill's recently published essay on "Nature" which well merits the attention of evolutionary psychologists. It is as follows:—"Again, there are persons who are cruel by character, or, as the phrase is, naturally cruel; who have a real pleasure in inflicting, or seeing the infliction of pain. This kind of cruelty is not mere hardheartedness, or absence of pity or remorse; it is a positive thing; a particular kind of voluptuous excitement. The East, and Southern Europe, have afforded, and probably still afford, abundant examples of this odious propensity." (Page 57.)

Now, I think that this "hateful propensity" is of more common occurrence than even Mr. Mill here gives it credit for. Indeed, I doubt whether anyone is entirely devoid of it, although, of course, everyone who is sufficiently advanced in moral culture to admit of the subordination of the baser instincts to the higher, has been more or less successful in "starving it by disuse." I believe, in short, that this propensity must be regarded as one of the primary instincts of our nature, although, like other instincts, it varies in its original intensity in different individuals, and is further differentially modified by the various influences of education. The nature of this instinct is well expressed by Mr. Mill in the above-quoted phrase, "a particular kind of voluptuous excitement." This, I think, supplies the reason why it is, as a rule, of stronger development in men than in women, and why, as Mill observes, it is of most frequent manifestation in warm climates. It is also worth observing, that although thus akin to the amatory passion, it is of much earlier growth in the life-history of the individual. Indeed, childhood and youth are, in civilised society at least, the seasons when its presence is most conspicuous; in consequence, I suppose, of the restraining power which reflection subsequently brings to bear upon it not as yet having been called into action.

To explain the origin of this instinct by the evolutionary psychology is, I believe, impossible in the present state of our knowledge; for there is no period in the history of the race at which it is conceivable that the latter should have derived any benefit from the birth and development of this peculiar passion. Yet I believe it is now in some persons, were it permitted to assert itself, of even more intensity than is the highly beneficial inclination to which, as we have just seen, it is so strangely allied. To refer to the striking similarity of this passion in man to that which is manifested by monkeys, is not of course to explain its origin; but I am quite sure it is in the monkeys that this explanation is to be sought. Everyone knows that these animals show the keenest delight in torturing others simply for torturing sake, but everyone does not know how much trouble an average monkey will put himself to in order that he may gratify this taste. One example will suffice. A naturalist who had lived a long time in India told me that he has not unfrequently seen monkeys

feigning death for an hour or two at a time, for the express purpose of inducing crows, and other carnivorous birds, to approach within grasping distance; and when one of the latter were caught, the delighted monkey put it to all kinds of agonies, of which plucking alive seemed to be the favourite.

As I am not aware that any other animal exhibits this instinct of inflicting pain for its own sake—the case of the cat with a mouse belonging, I think, to another category—I believe, if its origin is ever to receive a scientific explanation, this will be found in something connected with monkey-life.

PHYSICUS

Migration of Birds

YESTERDAY and to-day (17th and 18th inst.) continuous flights of migrant birds, chiefly fieldfares and redwings, have passed over this place in one uniform direction, from east to west, turning inland to the north-west, as though unwilling to cross Poole Harbour. The procession, so far as it attracted my own notice, began with daybreak of the 17th, and was so rapid and continuous all that day that enormous numbers altogether must have passed over us. Close flocks would come, and then a continuous flight of stragglers, but all in one and the same direction, and with little deviation from a well-defined aerial pathway, as though keeping some visible high-road. Yesterday the flight was down the wind; this morning against it; and although the flight was low and the birds seemed tired, none alighted in this neighbourhood. Whence did they come, and whither are they bound—east or west of this place? Can any of your readers say?

H. C.

Bournemouth, Dec. 18

The Potato Disease

In his letter of last week, Prof. Dyer states that his main object in his previous letter was "to claim for a distinguished English botanist credit for work done by him thirty years ago." In his previous letter this work is defined by Prof. Dyer to be the discovery by the Rev. M. J. Berkeley of the fact that the potato disease was due to the attacks of a parasitic fungus. As the service, with which botanists are familiar, that Mr. Berkeley has rendered in this matter, is the publication and advocacy in this country of the discovery previously made by Montague and others, with a few additional observations of his own, Prof. Dyer would confer a favour on his fellow-botanists by giving a more exact reference to the records which he is so anxious should be duly recognised.

INQUIRER

HELMHOLTZ ON THE USE AND ABUSE OF THE DEDUCTIVE METHOD IN PHYSICAL SCIENCE*

SINCE the translation of the first part of this volume was published, its whole scientific tendency, and specially a series of individual passages in it, have been subjected to a more than vigorous criticism by Mr. J. C. F. Zollner in his book "On the Nature of Comets." I do not think it necessary to answer expressions of feeling in reference to personal characteristics of the English authors or of myself. I have as a rule considered it necessary to reply to criticisms of scientific propositions and principles only when new facts were to be brought forward or misunderstandings to be cleared up, in the expectation that, when all data have been given, those familiar with the science will ultimately see how to form a judgment even without the discursive pleadings and sophistical arts of the contending parties. If the present treatise were intended only for fully educated men of science, Zollner's attack might have been left unanswered. It is, however, essentially designed for students also, and as junior readers might perhaps be misled by the extreme assurance and the tone of moral indignation in which our critic thinks himself justified in expressing his opinions, I consider that it would be useful to answer the attacks made on the two English authors, so far as may

* Translated by Prof. Crum Brown from Helmholtz's preface to the second part of the German edition of Thomson and Tait's "Natural Philosophy," vol. i.