

OUR BOOK SHELF.

A Concise Handbook of British Birds. By H. Kirke Swann. Pp. 210. (London: John Wheldon and Co., 1896.)

THIS is a handy and serviceable reference book on British birds. It includes descriptions of the characteristics, distribution, and habits of every species on the British list, and the information, though brief, is generally sufficient for identification. The classification and nomenclature followed is practically that of the British Ornithologists' Union. The specific names of first describers are, however, adopted, and sub-species or races are distinguished by sub-numbers and trinominals. Ornithologists, and bird-lovers generally, will find Mr. Swann's book of practical value in the field, and very useful for ready reference in the study.

Practical Radiography. By H. Snowden Ward; with Chapters by E. A. Robins and A. E. Livermore. Pp. 80. (The Photogram, Ltd., 1896)

THERE may be persons who furnish themselves with an outfit for Röntgen photography without having a knowledge of either electricity or photography. For such individuals, possessing aspirations without education in physical principles, this book has been written. The history of kathode rays and Röntgen's discovery occupies seven pages of the book. There is a chapter on the manufacture of an accumulator, and another describing how to make an induction coil. The remaining five chapters are taken up with descriptions of the apparatus and methods of Röntgen photography.

LETTERS TO THE EDITOR.

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Are Specific Characters useful?

WITH the above title Mr. Alfred Russel Wallace brought before the Linnean Society on June 18 an important communication, which derived additional interest from the fact that he himself was present in full health and vigour, as well as from the presence of a large number of naturalists who have given attention to the questions arising from the consideration of the theory of the origin of species by natural selection.

In the course of the remarks which were offered by his audience at the conclusion of Mr. Wallace's paper, I ventured to point out that the consideration of the class of phenomena which Mr. Darwin had described under the title "correlation of variation," seemed to me to lead necessarily to the conclusion that very often characters which are obvious and distinctive marks of species may be not useful but useless, since such obvious species marks may be only superficial and non-significant phenomena "correlated" (as Mr. Darwin used that term) with other less obvious but really important life-saving peculiarities, which might quite well escape the observation of the describer of "specific characters." As instances of the phenomenon of "correlation," I referred to those cited by Mr. Darwin, such as the concomitance of a development of feathers on the feet with the webbing of the toes in certain breeds of pigeons, the concomitance of abnormal dentition with hairlessness of the body-surface in Chinese dogs, the concomitance of deafness with blue eyes in male white cats. A case which seemed to me most striking and suggestive in connection with the utility of specific characters was cited by me. It was that which had led Wells to propound a doctrine of "natural selection" many years before Darwin and Wallace had placed their views in 1858 before the Linnean Society—a case which Mr. Darwin cited in later editions of the "Origin of Species," and is familiar enough. Wells pointed out in a memoir communicated to the Royal Society in 1813, that persons with dark pigment in the skin are relatively immune to tropical fevers, as compared with fair-complexioned

individuals. He argued that owing to this property of dark-skinned varieties of men, there would be a survival selection in tropical regions of such varieties, and that probably, or at any rate possibly, in this manner the black colour of tropical races might be accounted for. I mention this more or less hypothetical case as showing that an obvious and striking character, namely, that of black pigment in the skin, might become predominant, and conceivably might become a "specific character," although the blackness was not in itself a "useful," that is, a "life-preserving or progeny-ensuring" character, but merely the *accompaniment* of a power of resisting malarial germs, which we now have reason to believe consists in a special chemical activity of the leucocytes (phagocytes) of the blood and other tissues. From the consideration of this and other similar cases, I argued that many "specific characters" (that is to say, as defined by Mr. Wallace, characters which individually or in definite association with other characters constantly occur in one species and not in the other species of a genus) must be devoid of utility themselves, and appear merely as the "correlatives" or "concomitants" of really effective life-preserving or progeny-ensuring characters. I insisted, finally, on the very great importance of the correlation of parts in animal organisms, and the necessity of regarding animals (and presumably also plants) as most highly-wrought mechanisms in which no part can vary without the accompaniment of variation in some remote and (in our present state of knowledge) unexpectedly correlated part, and to a degree often excessive and (in our present state of knowledge) unaccountable. Thus, as Mr. Darwin himself pointed out, the selection of a given favourable variation may lead to excessive variation in a remote region of the organism, which in its turn will very often (but not necessarily always or at once) become the subject of further selection. Mr. Darwin appears to have deprecated, in conversation with Mr. Thiselton-Dyer (according to the latter's interesting statement in the debate on Mr. Wallace's paper), the invocation of this theory of "correlation" as an explanation of cases of apparently useless parts in animals or plants when under investigation, holding that our ignorance of the modes in which parts may be serviceable to an organism is so great that we should rather experiment and observe as to their possible utility than advance a theory which dismisses further inquiry. Whilst agreeing with Mr. Thiselton-Dyer as to the "immorality" (as he termed it) of a naturalist who favours theories which paralyse his activity as an observer and experimentalist (on which subject see the last paragraph of this letter), I yet think that, as seekers after true knowledge, we are bound to face the complex problem in all its aspects. The obvious character, as well as many less obvious characters, which we note as distinguishing one species from another, are not improbably, it must be admitted, in many cases concomitant phenomena of some other phenomenon which alone among them is effective in determining the preservation of the life, or the production of progeny in the case of the individuals so characterised.

At the same time I think that it may well be maintained that such secondary or concomitant characters are not long allowed to remain non-significant, and that sooner or later they fall under the moulding action of natural selection, becoming as they increase in volume either useful or injurious.

My chief object in writing this letter is to draw attention to the views of Prof. Weldon, who has for some time, as all zoologists know, been occupied in tabulating a very large series of measurements of growing crabs. When I had stated my views as to the importance of "correlation of variation," with which Mr. Meldola and Mr. Wallace subsequently expressed their complete agreement, Prof. Weldon declared, with some expressions of reluctance and regret—due, as he was good enough to say, from an old pupil to the teacher whom he is about to denounce and demolish—that to attempt to say which of two or more correlated growths is the cause of survival is unreasonable, and that when I suggested, even as a matter for consideration, that a certain germ-slaying quality in phagocytes accompanying a pigmented skin, rather than the pigment itself in the skin, is the cause of the survival of dark-skinned people in malarial regions, I was "absolutely illogical." "It is," said Prof. Weldon, "impossible logically to separate these two correlated phenomena. The coloured skin is as much a cause of the survival of the dark man as is the germ-destroying property of his blood."

I was at the time entirely unable to appreciate the drift of Prof. Weldon's thought. I was not prepared for an empty