

where given, the formulæ of the very soluble and of the sparingly soluble double thiosulphates of silver and sodium should change places. The volume is enriched by many beautiful specimens of photographic methods of illustration.

Wonders of the Bird World. By R. Bowdler Sharpe. Pp. xvi + 399. Illustrated. (London: Wells Gardner, Darton, and Co., 1898.)

MR. SHARPE'S lectures on the "Curiosities of Bird Life" obtained such extensive and well-merited popularity, that their reproduction, with extensive additions, in book-form may be welcomed; more especially since, owing to ill-health, the author has been compelled to abandon the lectures themselves. Although apparently not containing much new matter, the volume is certainly a most interesting production, calculated to attract readers who possess little or no claim to rank as naturalists. It teems with anecdote; and, for the most part, is singularly free from dry technicalities.

It is true that in one chapter we have the inevitable list of "orders and families" of birds, but elsewhere classification is conspicuous by its absence; and the chief aim of the author seems to be to treat his favourites from the aspect of habits. We have, for instance, chapters on coloration, nesting and nests, courtship and dancing, mimicry and protective resemblances, and parasitism. The volume commences with two chapters on "wonderful birds," in which the reader is introduced in a popular way to some of the most remarkable extinct types. Among these, reference may be made to some excellent restorations from the pencil of Mr. W. P. Pycraft, which seem to convey the best possible idea of what these birds looked like in life. And here attention may be directed to the beauty of the illustrations generally, most of which are by Mr. A. T. Elwes. If it be not almost invidious to make a selection, the figures of the secretary-bird and white-headed stork strike us as especially deserving of commendation. While mentioning that every bird is really "wonderful," Mr. Sharpe includes in his first two chapters all the ratite birds, the hoatzin, the megapodes, dodo, and penguins; all of which are rightly placed in this assemblage.

To analyse the book is entirely beyond the limits of our space, but we may specially draw attention to the chapters on nesting habits; and among these to the very interesting account of the entombment and feeding of the female hornbill during the period of incubation. The notes on the cuckoos, and especially the resemblance of the black cuckoo to the drongo, also strike us as being of more than ordinary interest. But when all is so good we must refer the reader to the work itself.

The weakest chapter in the book is undoubtedly that dealing with the geographical distribution of birds; and in this, we venture to think, the author has by no means availed himself of all the information accessible. Indeed, we may say he is distinctly behind the time; especially as regards the relations of the Malagasy fauna to that of Africa. And here we must protest against the bugbear "priority" being made an excuse for employing the discredited term "Lemurian" instead of Mascarene.

We could wish, also, that the author would make up his mind as to the names to be employed for particular species of birds, instead of constantly changing them. For instance, we find in his "Handbook of British Birds," published a few years ago, the swift figuring as *Microopus apus*, whereas it appears here (p. 226) as *Apus apus*. Again, in the former work we have Capercaillie, in the present one (p. 352) Capercaillie. If *Apus* is entitled to stand for the bird, it must be discarded for the well-known crustacean. Misprints are few, although we notice (p. 254) *Eurypya nelias* standing in place of *Eurypyga helias*.
R. L.

LETTERS TO THE EDITOR.

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Chemists and Chemical Industries.

THE two letters on this subject in your issue of February 23, the one by my good friend Mr. Friswell, the other by my distinguished pupil Mr. Pope, are in striking contrast: the former says much that is true, but in the end, I think, gives an entirely false impression.

Why things here and in Germany are different has little to do with the technical teaching given in the two countries: the German teachers are as much "academical pedagogues" as are we English—perhaps a little more so. Manufacturers—firms like Mr. Friswell's—are mainly responsible for our decadence. Next to Perkin, his original firm were pioneers in the aniline colour industry; how many trained chemists have they had in their employ? Half a dozen? How many have been engaged in the industry in the country generally? A score? And in Germany—hundreds! Germany owes her success to the fact that her manufacturers and merchants are cute men of business, willing to give themselves infinite trouble, and who not only understand their business but also appreciate the value of science. Ours as a class do not know what science is—does, for example, a single one of Mr. Friswell's directors really know what aniline is?

Mr. Friswell by implication libels our English schools when he says: "Our technologists must come from Germany, or go there to be made." Prof. James Stuart, in the otherwise most admirable rectorial address he recently delivered at St. Andrews, made a similar erroneous statement. It is time that this aged German ghost were laid and such utterly false doctrine put aside. Faults our schools have, and grave ones, but they have made an extraordinary advance of late years and are daily becoming more practical and less academic—and this notwithstanding that our universities regard research work only as a post-graduate exercise and by teaching reliance on authority do their best to kill the goose that is to lay the golden eggs, a policy the very reverse of that pursued in Germany; and notwithstanding also that we expatriate our most capable students by Royal Commission and sustain them abroad practically as assistants—and very competent ones, too—of foreign workers, much to the detriment of our own schools and very often little to the advantage of the student. We now give in quite a number of our schools an education even superior to that given in Germany, and our native product is to be found doing the best of work throughout the country. I will go further and say that in too many German schools much that is now taught and learnt is certainly not science and most harmful, exact and painstaking work having given place to wild speculation. It is partly because this is felt to be the case that the movement discussed in Dr. Fischer's pamphlet has been initiated. I yield to no one in respect and admiration of German achievements, but we carry adoration too far and in our gratitude for the many services German teachers have rendered us forget that neither is England Germany nor the English character identical with the German—*Gott sei Dank*—both nations having peculiarities of which each is justly proud.

If English manufacturers will show their appreciation of science as the Germans do by giving employment at *fair wage* to men who have learnt to think for themselves as well as to work honestly and exactly, our schools will soon be filled to overflowing—genius will be attracted to them, and the tide of German competition will be easily stemmed in so far as chemists can stem it. But a far darker cloud looms in the near distance, which probably will overshadow both Germany and us: for it is very doubtful if we shall succeed in holding our own against American readiness, resourcefulness and organising ability; this, indeed, is a factor in the coming struggle which we shortsighted English seem altogether to miss out from our calculations, but it were well that we noted it seriously.

HENRY E. ARMSTRONG.

Wehnelt's Contact-Breaker for Induction Coils.

THIS important advance in technique will undoubtedly lead to increased activity in X-ray work, and I trust the following notes will therefore be of interest to your readers.