

profits from their mines, in which profits Europeans have as yet no great interests," &c.

After this it is not surprising, as the translator informs us in the preface, that the publication of the book "caused quite a stir in German circles."

OUR BOOK SHELF.

Crystallography for Beginners, with an Appendix on the use of the Blowpipe and the Determination of Common Minerals (after the method of Dr. Albin Weisbach). By C. J. Woodward, B.Sc. Pp. 164. (London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd., 1896.)

IN a preliminary chapter of this book the student is taught how to prepare for himself, with due regard to economy of purse, a set of models to be used in connection with the various lessons. In the course of the following 72 pages the constancy of the angles of crystals, symmetry, notation, drawing of crystal forms and spherical projection, are in turn explained. The physical properties of crystals are then briefly touched upon, and in a last lesson mero-symmetry is discussed. The appendix (55 pages) deals with a subject entirely different from Crystallography, namely Determinative Mineralogy, and is made up almost wholly of tables drawn up after the manner of those of Dr. Weisbach. The book contains numerous woodcuts in the text, and is furnished with four plates, two of them consisting of diagrams to be pasted on cardboard and used in the construction of the aforementioned models. To each lesson is appended a set of useful questions relating to the subject which has been discussed. Some of the statements are wanting in accuracy: for instance, on page 55 the student is told that "the symbols of all planes in a zone have two of their indices always in a constant ratio," which is untrue; and at times the language is wanting in neatness and precision: still, if the student is in the hands of a careful teacher, he will be able to get much help from the book, and is not likely to be led astray.

By the Deep Sea; a Popular Introduction to the Wild Life of the British Shores. By Edward Step. Pp. 322. (London: Jarrold, 1896.)

THE author of this little volume is already favourably known by his popular books on wild flowers, &c., and the present work will add to his reputation as a writer for the non-scientific reader. The author's endeavour has been to introduce to the seaside visitor a large number of the interesting creatures to be found on the rocks, the sands and the shingle, and he claims to have written the whole of the work in close contact with the objects he describes—not only of cabinet specimens, but of the living creatures under natural conditions. In his own words: "There is not a line in the whole volume that has not been written within a few yards of, and in full view of the rocks." The twenty chapters into which the book is divided are devoted to the sea and its shores, low forms of life, sponges, zoophytes, jelly-fishes, sea-anemones, sea-stars and sea-urchins, sea-worms, crabs and lobsters, shrimps and prawns, some minor crustaceans, barnacles and acorn-shells, "shell-fish," sea-snails and sea-slugs, cuttles, sea-squirts, shore fishes, birds of the seashore, seaweeds, flowers of the shore and cliffs. The style of writing is easy and attractive, and the text is further elucidated by the insertion of a number of well-chosen, if somewhat rough, illustrations from the works of P. H. Gosse, and others which appear to have been specially drawn for the work. Many a seaside holiday will be more fully and permanently enjoyed by the study of this tastefully got-up little book, the usefulness of which is increased by a general and a classified index.

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LETTERS TO THE EDITOR.

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The Utility of Specific Characters.

I HOPED that I might have held my peace on this subject. Prof. Lankester, however, complains, and not for the first time, that I have misrepresented, or at any rate misunderstood him.

I do not doubt his acquaintance with Prof. Weldon's work, though he has allowed a long time to elapse before criticising it. I am glad that he regards it as "interesting and valuable." But this is what he said about it in NATURE for July 16 last:—"Such methods of attempting to penetrate the obscurity which veils the interactions of the immensely complex bundle of phenomena which we call a crab and its environment, appear to me not merely inadequate, but in so far as they involve perversion of the meaning of accepted terms and a deliberate rejection of the method of inquiry by hypothesis and verification, injurious to the progress of knowledge."

It is quite true that Prof. Lankester has not said in so many words that "Prof. Weldon's investigation of the crab's carapace 'does not satisfy the canons of scientific inquiry.'" But it appears to me that this is a very mild way of putting what he did say.

I expressed the opinion that Prof. Weldon's investigation did rest on an hypothesis, and that this was subjected to verification. Whether the hypothesis was reasonable and the verification adequate is a matter on which Prof. Karl Pearson and others are entitled to form their own judgment.

Kew, September 28.

W. T. THISELTON-DYER.

I FEEL grateful to Prof. Karl Pearson for his lucid and rational contribution to this discussion, in which it has sometimes seemed to me that the main question was in danger of being obscured by more or less irrelevant arguments.

I pointed out in a letter to NATURE, soon after the publication of Prof. Weldon's report last year, that he had not, and had not claimed to have, proved that there was a differential or selective death-rate in shore crabs, with respect to variations of their frontal breadth. He showed that the curve of variation in larger (and therefore presumably older) crabs was different from that in smaller crabs. The departures from the mean were less. He concluded, that if this difference were not due to growth-changes it must be due to the death of crabs with extreme variations. But on the other hand it had to be proved that the difference was not due to growth-changes. Changes in the proportions of parts are so common during growth in so many animals, that it seemed to me much more likely that the difference discovered by Prof. Weldon was due to such changes than to a differential death-rate. I understand that he has since been investigating what he calls the law of growth in these crabs, but so far as I know he has not published any further results.

I am glad to find that Prof. Karl Pearson's opinion concerning the conclusions to be drawn from the evidence published by Prof. Weldon, entirely agrees with mine. It would be very interesting to learn now whether Prof. Weldon is able to settle the question of the changes occurring in the growth of shore crabs, and either to confirm or withdraw his suggested conclusion that the difference he described was due to selective death-rate. It would take a good deal of evidence to convince me that shore crabs in which the frontal breadth differed slightly from the mean, died in greater numbers than those in which it was nearer the mean. But if the evidence is forthcoming, I am ready to accept it. It seems to me that Mr. Thiselton-Dyer is inclined to accept the conclusion before the evidence is forthcoming. He seems to have overlooked the other possible explanation of the result, namely changes in the same crabs during growth.

I also maintained in my letter last year, as Profs. Lankester and Karl Pearson maintain now, that if a differential death-rate were demonstrated, it would still be necessary to discover how that death-rate was caused, what was the relation between the character in question and the conditions of life which caused individuals with certain variations of the character to die off.

I do not profess to be a specialist in logic, but it seems to me that the fallacy into which Prof. Weldon has fallen is that of confounding the categories. He maintains that if a certain