

claims of education in natural history as a means to individual and mutual happiness are perhaps too well known to need assertion; at any rate, it is not fashionable to put them forward.

For schools, one would like in this book a little more of the breath of the open country, such as appears in the few lines descriptive of the Cotteswolds; but the direct appeal to Nature in chapter ix. is very refreshing and characteristic of the author. Where, indeed, the work has been altered from the first edition of 1863, it is in matters of more recent discovery, its tone being fully preserved. Some little notes have gone, such as that on the difficulties of the Welsh "ll" on p. 216 of the original (p. 261 of the present edition is more serious); but the references to history and familiar authors remain, even to Wilkie Collins, while the introduction of derivations has been considerably and interestingly extended. Quaint effects in such matters cannot always be avoided, as in the following (p. 247), "Illænus (*squint-eye*) *Davisii* (*after Mr. Davis*)."

It is difficult in such a book to deal with rival theories; but the discussion of coral-islands, carried over seven pages, scarcely does justice to Darwin's position, and is certainly not complete—as in accounting for the atoll—in its statement of more recent views. Nor can we consider the treatment of the specific gravity of the earth (p. 8) as altogether beyond question, accepting as it does the continuous compressibility of crystalline bodies.

To come to small matters, the use of "potash" in different senses on pp. 46 and 48 may mislead the tyro; the spelling "tachylite" is adopted for "tachylite"; and "Protospongia fenestella" for "fenestrata" occurs on both p. 238 and p. 239. On p. 329 we have, freshly inserted, the Pterodactyl from Owen's "Palæontology." This figure, arising from the difficulty of interpreting some of the earlier specimens, still appears in well-regulated text-books, but is sometimes accompanied with warning foot-notes; here it is aggravated by having its digits numbered, and the existence of a fifth, "answering to the little finger in our own hands," is distinctly stated in the text. But the other woodcuts are numerous and effective; and we have a few bold drawings of natural features as they actually appear, which always appeal strongly to the untrained observer. It is too much to ask for full-page sketches of our British scenery; but we look back in this matter somewhat regretfully on that earlier work of Jukes, the "Popular Physical Geology," illustrated by Du Noyer, and published with undoubted spirit by Reeve and Co. in 1853. G. C.

OUR BOOK SHELF.

*Magnetism and Electricity.* By W. Jerome Harrison, F.G.S., and Charles A. White. (London: Blackie and Son, 1890.)

WE note one or two features in this work which make it worthy of commendation; for example, the authors have avoided speaking of magnetic or electric fluids, and have endeavoured to bring out the fact that these forces are but "states or affections of matter," and their endeavour is much to be praised. It is also good to see an introductory chapter on "Matter and Force," and a special chapter on "Potential," about which elementary students, as a rule, know very little. Most of the diagrams, how-

ever, are of the stock kind, and with the exception of the above points the book possesses nothing to distinguish it from many other elementary manuals dealing with the same subject

*Science applied to Work.* By John A. Bower. (London: Cassell and Co., 1890.)

THERE is much that is praiseworthy in this little work; it is an easy introduction to mechanics, and free from all mathematical formulæ, is written in very clear language, and deals entirely with the mechanics of every-day life. The book has been designed especially for the artisan section of the National Home Reading Union, and will doubtless be a means of eradicating the rule-of-thumb work which is still characteristic of a large proportion of the artisan community. Many hints are given for making simple apparatus to demonstrate the principles laid down, the applications of these principles are well pointed out, and the work altogether meets the requirements of the class for whom it is intended.

LETTERS TO THE EDITOR.

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Testing for Colour-Blindness.

DR. OLIVER LODGE asks (May 29, p. 100) why those interested in testing for colour-vision do not employ Lord Rayleigh's arrangement, in which yellow is matched by certain proportions of red and green.

This suggests to me a difficulty I have felt for many years. I am partially colour-blind, and have the usual difficulty in seeing whether a fuchsia or a *Pyrus Japonica* is in flower or not. I have noticed that many persons speak of flowers such as *Lychnis flo.-fovis*, or *Epilobium angustifolium*, &c., as being red. I should unhesitatingly class them among blue or purple flowers. They give me no suggestion of red, but I observe that when they are coloured in botanical works, such as Sowerby's "Botany," &c., they are painted of a decidedly reddish colour, and not as they appear in Nature. I used to attribute this to carelessness, but it is now evident to me that two colours which when placed side by side appear identical to normal vision do not appear at all identical to the colour-blind. Doubtless pigments could be found which would produce similar impressions on both orders of vision, but this is only a matter of chance. An investigation on these lines might give useful information.

On the question of flag signals, I would observe that though I can make nothing out of the ordinary dull greens, reds, and browns, and am ready to believe anything that is told me about them, my impressions of scarlet and orange are intensely distinct and vivid. Scarlet (and especially orange scarlet) is the most vivid and beautiful colour which I know, and utterly unlike any other; it becomes nearly black in very faint twilight. I could recognize a flag of scarlet or orange under any possible circumstances and at almost any distance. If danger flags had this colour they would perfectly suit the ordinary colour-blind, and could never be mistaken for green.

On the subject of night signals I cannot make a useful suggestion. Green lights are very distinct, but they appear to me as a poor blue with very little power in them. Red lights are distinct enough compared side by side with ordinary yellow ones, but seen alone under unfavourable circumstances there is nothing to catch the eye or the imagination, and they might easily be mistaken for yellow or ordinary lights.

London, June 9.

LATIMER CLARK.

Coral Reefs—Snail Burrows.

IN regard to Dr. von Lendenfeld's letter (May 29, p. 100) it may suffice for me to say that I had not seen his reviews of Darwin's "Coral Reefs" in the periodicals which he names (for I find it impossible to keep level with the advancing flood of scientific literature), and that if his reply "considerably modifies