

its details are already familiar, the picturesque clearness with which they are presented will make their knowledge more real and more complete. The standard of excellence maintained in the lectures makes distinction difficult and invidious, or we would distinguish the lectures on Newton and those on tides as models of what such popular scientific expositions should be. The book is copiously, and, on the whole, well illustrated, but some of the illustrations—notably those of clusters and nebulae—are very familiar and somewhat out of date. A curious mistake occurs on page 201, where a well-known drawing of a comet appears as an “old drawing of the Andromeda nebula.” The illustration on page 326, showing the paths of Uranus and Neptune and their relative positions from 1781 to 1840, and professing “to illustrate the direction of their mutual perturbing forces,” is partly misleading; but in introducing this Dr. Lodge has erred in good company, for the diagram, originally due to Dr. Houghton, appears in many of our recent astronomical text-books. A. T.

Electric Lighting and Power Distribution. Part I. By W. Perren Maycock, M.I.E.E. (London: Whittaker and Co., 1892.)

THIS cheap and useful little text-book has been written for the author's junior students, as he is of opinion that no trustworthy elementary work on the subject is to be obtained. The scope of the work has been limited to the syllabus of the ordinary grade examination of the City and Guilds of London Institute. We find, however, much information on subjects not usually found in other manuals. The book is freely illustrated, and the descriptions are clear.

It is very important for the junior student to understand clearly what is meant by a line of force, and to grasp the fact that lines of force are only *assumed* to exist, because, by such an assumption it is possible to explain many, otherwise inexplicable, phenomena. On page 47 we find the following statement:—“The power which any magnet possesses, of picking up pieces of iron, and of acting upon another magnet, depends upon the existence of lines of magnetic force.” This quotation is vague; a junior student might easily imagine that the lines of force really existed, whereas they are purely assumptions, to elucidate the phenomena of magnetic attraction. The illustrations of simple bar magnets, solenoids, and electro-magnets, in which the lines of force are delineated, should have the assumed directions of the lines of force clearly shown by arrow-heads. This might be done with advantage in Figs. 17 to 20.

Chapter IV. deals with induction of currents, electro-magnetic induction, Faraday's Law, and concludes with a clear description of magneto-motive force, magnetic resistance, magnetizing force, induction and permeability. These latter are very difficult for a junior student to understand thoroughly, and the author should have devoted more space to the discussion of these important points in dynamo construction. One particularly good feature in this text-book is the large number of questions arranged at the end of each chapter. These are well suited to test the knowledge of a student. Chapter V. deals generally with electrical testing, measuring instruments used in installations, and meters for measuring the current, such as Teague's, Elihu Thomson's, and the Wright-Ferrauti. Chapter VI. concludes the book, describing the principle of the dynamo, different types of machines, and the construction of the various parts.

Taken as a whole this book attempts too much. The matter described has suffered considerably by condensation, a serious thing where junior students are concerned. Most of the illustrations are good; some are indistinct, and Fig. 98 is decidedly wrong, showing the brushes set for one direction of rotation, and the arrow indicating the reverse.

On the other hand the sequence of matter is good, and a student should learn much from the work. The author takes great pains to describe clearly the many units involved, particularly the applications of Ohm's law. The book would last much longer in the hands of the average student if the present paper binding were replaced by something stronger.

The Naturalist on the River Amazons. By Henry Walter Bates, F.R.S. With a memoir of the author by Edward Clodd. Reprint of the Unabridged Edition. With Map and Numerous Illustrations. (London: John Murray, 1892.)

THIS work is so well known, and has long held so high a place among scientific books of travel, that it is unnecessary to do more than note the appearance of a new edition. It is clearly printed on good paper, and the illustrations are well reproduced. The introductory memoir by Mr. Clodd is a most welcome record of the main facts of Mr. Bates's career. The materials for this interesting sketch were enriched by letters placed at the author's disposal by Sir Joseph Hooker and Mr. Francis Darwin. An excellent portrait of Mr. Bates is included in the volume.

LETTERS TO THE EDITOR.

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A Proposed Handbook of the British Marine Fauna.

SUCH a handbook as Prof. Herdman suggests is so much wanted that many naturalists must from time to time have felt tempted to essay it. But the difficulties are very formidable. Prof. Herdman seems to contemplate the preparation of such a work mainly as a labour of compilation. But the groups where compilation would nearly suffice are just those where the handbook is least required. On the other hand, such a group as the Amphipoda, in spite of Canon Norman and Mr. Stebbing's many papers, is still in great need of revision; it was only the other day that Canon Norman opened our eyes to our rich fauna of Mysidæ, before which time no search among published records would have told us anything worth the having; we are in just the same position as to our British Cumacea, until Canon Norman again reveals the treasures of his cabinet; our Pycnogonans are almost as little known. In every one of these groups, and in many others like them, the preparation of a hand-list would need the experience of a specialist, just as much as the Tunicata would require Prof. Herdman's own special knowledge. The area to be embraced is another difficulty. Prof. Herdman proposes to take the British area as defined by “Canon Norman's” B.A. Committee in 1887, on which he himself served. But the committee's report was repudiated by Canon Norman himself, who afterwards suggested a wider “British area,” whose boundaries I fancied had since been recognized as more suitable by everybody. However the British area be defined, there will long remain a difficulty in the numerous forms not yet recorded from within it, but which are likely, or certain, to turn up when sought for. Such things as the parasitic and other Crustacea described of late years by Giard and his pupils from Wimereux form a case in point. I am inclined to think that to make in the first instance a hand-list of the whole fauna of the North Atlantic basin would be not a bit more difficult, but in some respects easier, than to restrict the list to the British area alone. That it would be incomparably more useful is certain. It would make a book not more than three times (perhaps little more than twice) as big as Carus's “Fauna Mediterranea.” And it would be a very important step towards that new *systema naturæ* of which the Germans are already beginning to talk, and which it is high time were begun.

But Prof. Herdman both asks discussion of his plan, and also invites criticism on his execution of it. Take his very first illustrative genus, which he tabulates as follows:—

ANTENNULARIA.—Stems simple or branched; pinnæ verticillate; nematophores along the stems; gonothecæ axillary, unilateral.