

creature's movements are due to contractility of the ectoplasm is followed (in one instance, on p. 17, where this matter is discussed, "endoplasm" seems to have been printed by mistake). Turning to the chapters on Vertebrata, it will be found that Ridewood's researches on the development of vertebræ have been utilised; these, as is pointed out in the preface, "have narrowed the gap between the so-called arco-centra and chorda-centra."

It is somewhat surprising to find that the paired serial excretory tubes of the Peripatids are still described as coelomducts, in spite of Miss Glen's recent demonstration (carried out under Prof. MacBride's auspices) that they are true nephridia. This discovery renders the retention of the group in a "class Antennata," which includes also Millipedes, Centipedes, and Insects, the more unnatural.

As one turns over again the pages of this volume the clearness of the descriptions and the excellence of most of the 360 illustrations afford renewed pleasure. In a future edition some of the representations of insects might be replaced with advantage; no entomologist would recognise the figure that does duty for a tsetse-fly.

G. H. C.

*Marine Engineering. (A Text-Book.)* By Engineer-Capt. A. E. Tompkins. Fifth edition, entirely revised. Pp. xi+888. (London: Macmillan and Co., Ltd., 1921.) 36s. net.

THE fourth edition of this work was published in 1914, a few weeks before the outbreak of the war, and was reviewed in our columns in September of that year. Owing to the great advancement in marine engineering which has since taken place, a large part of the book has been rewritten, and the remainder thoroughly revised. We are specially glad to notice that room has been found for a fuller consideration of mercantile practice, since this will have the effect of bringing the merits of the volume before a greatly enlarged class of readers. The section on turbines now covers three chapters, and includes an adequate discussion of geared turbines and auxiliaries. The latest systems of oil-firing are included, and the section on internal-combustion engines has been enlarged, and embraces both submarine and mercantile engines.

The labour of revising a comprehensive treatise such as the volume before us must have been very great, especially when one remembers that the author was on war service supervising repairs both at home and in Italy; the experience he gained during those years is embodied in the volume, and adds greatly to its value. The book is primarily intended for sea-going engineers, and therefore contains nothing in the way of mathematical fireworks. Sufficient of the theory is included to enable the reader to understand clearly the principles underlying the working of the machinery which the marine engineer is called upon to handle. The book contains a very large

number of admirable drawings, and these, together with the clear descriptions, render the volume of value to all connected with marine engineering. There is also a large collection of examination questions at the end of the volume; numerical answers are appended to these. The impression given by the volume, however, is that it is not a cram book for examinations, but a carefully thought out scheme which will add greatly to the knowledge of the engineer.

*An Introduction to Technical Electricity.* By S. G. Starling. Pp. xii+181. (London: Macmillan and Co., Ltd., 1921.) 3s. 6d.

THIS little work is one of a series designed for use in continuation classes and central schools to form the first stage in specialisation in the direction of electro-technics, and necessarily treats the subject in an elementary way intermediate between the scientific and the practical. With the exception of a brief mention of the transformer, only continuous currents are dealt with, and only the very simplest mathematics are required. The conception of the electric current is very suitably introduced by simple experiments with dry cells, and commendable features of the method by which the subject is developed include the leading up to the permanent magnet through the electro-magnet, and making the student familiar with the effects of a current before he is bothered about details as to its production. On the whole, however, we should have liked to see a little more continuity of idea in the treatment. Practical applications are kept well in view all through, and, in spite of a few minor inaccuracies of engineering detail, form adequate illustrations of the principles. Lamps and lighting, motors and dynamos, and the telephone are briefly explained, and, as might be expected, electrostatics do not come within the purview of the treatment.

*Set of Cards for Teaching Chemical Formulae and Equations.* Devised by Mrs. M. Partington. (London: Baird and Tatlock, Ltd., n.d.) 1s. 4d.

THIS is a set of cardboard pieces printed with the symbols of elements and common radicles, and graduated in size according to predominant valency; positive radicles are blue, negative are pink. The formulæ are made up by placing the appropriate elements or radicles side by side. It is at once evident that ferrous phosphate is  $\text{Fe}_3(\text{PO}_4)_2$ , and ferric phosphate  $\text{FePO}_4$ , while such combinations as  $\text{CaCl}$  or  $\text{NaCl}_2$  appear wrong at once. The idea, so far as it goes, is ingenious, and a great deal of facility in writing formulæ may be gained by an exercise more like play than work; moreover, the method cannot foster the misconception of rigid bonds. It is suggested that the pieces can be used to make constitutional formulæ—sulphuryl chloride and sulphuric acid are given as examples. It is evident, however, that before pupils get to the stage of considering the relation of these compounds, the device should have served its purpose.