

the work, bear evidence of having been selected for the purpose of gradually and systematically leading the student to do some independent thinking and original work. From every point of view this elementary work on 'Plane and Solid Geometry' is a commendable text-book.

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Zoology: An Elementary Text-book. By A. E. SHIPLEY, M.A., and E. W. MACBRIDE, M.A. (Cantab.), D.Sc. (Lond.). New York, The Macmillan Company. 1901.

This is a neatly gotten up general zoology of xxii and 632 pages, with 349 text figures. The text is divided into 23 chapters, of which the first is an introduction of 12 pages briefly reviewing the properties of living things and defining a number of general terms and phrases. The remaining pages are apportioned in order as follows: Protozoa 27, Cœlenterata 29, Porifera 7, Introduction to the Cœlomata 6, Annelida 28, Arthropoda 87, Mollusca 39, Echinodermata 40, Brachiopoda 6, Polyzoa 5, Chaetognatha 4, Hemichordata (*Balanoglossus*) 5, Cephalochordata (*Amphioxus*) 14, Urochordata (Tunicates) 9, Craniata 259, Platyhelminthes 21, Nemertinea 5, Rotifera 8, Nematoda 6, Index 16.

Putting aside likes and dislikes, one must admit that this is a pretty fair distribution. We cannot, however, see what is gained by considering the Cœlenterata before the Porifera, and the Flatworms, Roundworms, Nemertean and Rotifers after the Mammals. Logical and natural sequence of generalizations is not without distinct value and interest, and from this point of view such an apparently insignificant matter of detail as intervening the Cœlenterata, or any other group, between the Protozoa and Porifera becomes important.

On the whole, the treatment of the phyla is good. In each group of animals some more or less representative form is described in considerable detail, and other forms of interesting habits or having a bearing upon some principle or generalization are noted. The systematic tables avoid the shoals of details and briefly characterize only the phyla, classes,

subclasses, orders and suborders. Under the final division of the group considered one to three genera are named as examples. The book being an English one, we are not surprised to see American forms somewhat slighted. The nomenclature is not always the most modern, but that is a matter of such minor importance in an elementary text that it may be overlooked. In some respects the authors have not always lived up to the excellent principles laid down in the preface. With them we believe technical terms and phrases should, so far as practicable, be elucidated in connection with the first presentation of forms illustrating them. We naturally expect to find radial symmetry noted in connection with the Cœlenterata, but it is first mentioned on page 80 in the introduction to the Cœlomata. As a rule the principle is lived up to in good shape. The very limited space given to embryology and physiology is in our opinion a real defect. It would have been better to make room for more of this by cutting out portions of the general accounts. We also believe that taking up a phylum by beginning with a consecutive account of some form as a type is the proper plan for an elementary text-book. In this respect the treatment of the Arthropoda, which is comparative, is inferior to that of the Annelida and other phyla.

To write a good text-book on zoology is no easy task, and to write one acceptable to every one is an impossibility. The most that should be expected of a text-book is positive and continuous assistance to teacher and pupil. Successful teaching lies with the teacher and not in the text-book.

The book before us is well gotten up. The typographical work is good, the figures as a rule are clear and the page is clean and inviting. While in some respects it still leaves room for improvement, we consider it one of the best and most worthy of recent elementary text-books on zoology.

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Gustav Theodor Fechner. Rede zur Feier seines hundertjährigen Geburtstages gehalten von Wilhelm Wundt. Leipzig, Engelmann. 1901.

In his address delivered at the centenary of Fechner's birth, Professor Wundt does not attempt to give a full outline of the philosophical and scientific views of this last of the great German philosophers of the nineteenth century. He states at the outset that his object is to speak of the relation between Fechner the philosopher and Fechner the scientist, and he succeeds admirably in showing the fundamental connection between the religious mysticism of Fechner and those rigorously exact investigations which led to the establishment of the science of psycho-physics. He shows with a delicate touch, a keen insight and in masterly form, how originally purely metaphysical ideas resulted in the establishment of principles which lifted this new science for all future times above the danger of any subjective views. Professor Wundt defends Fechner the scientist against Fechner the philosopher and Fechner the poet, and apparently does not believe that the metaphysical speculations of the '*Innere Psychophysik*' will have many adherents in the future; he compares these aptly with Kepler's mystic '*world-harmony*' now forgotten, but valued by its author more than his immortal third law. The lasting service of Fechner, according to Wundt, consists in the fact that he for the first time introduced 'exact methods, exact principles of measurement and experimental observation into the investigation of mental life' and that, in consequence, he was the first to make a scientific psychology possible.

Wundt's pamphlet contains, besides, several interesting '*Addenda*': Personal Reminiscences, an essay on Fechner's relation to the natural philosophy of Oken and Schelling, on his philosophical method, his psychology, his attitude towards spiritism and a list of his principal works. Wundt's essay will serve as an excellent introduction to the world of thought contained in the works of Fechner, which are far too little known in this country, and which even in Germany are only beginning to take the rank which is due to them in the study of the history of philosophy.

If a further guide to the study of Fechner should be desired, we would suggest to take

up after Wundt's essay, R. Seydel's paper on *Religion und Wissenschaft* (Breslau, 1887), W. Bölsche's *Charakterbild (Deutsche Rundschau, Sept., 1897)*, and K. Lasswitz' critical Biography (1896), which last is still unsurpassed and far preferable to the biography compiled by Kuntze, written from the one-sided standpoint of an orthodox theologian.

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SCIENTIFIC JOURNALS AND ARTICLES.

The Plant World for January contains an illustrated article on 'The Missouri Botanical Garden,' by the Director, William Trelease; 'A Visit to the Royal Palm Hammocks, Florida,' by Charles T. Simpson; 'Plant Agencies in the Formation of the Florida Keys,' by Charles L. Pollard, besides the usual briefer articles. The Supplement, devoted to the families of flowering plants, contains the first portion of the Orders Opuntiales and Myrtifloræ.

Bird Lore for January-February opens with 'Recollections of Elliott Coues,' by D. G. Elliot and C. A. Curtis, in which we are told something of his youth and of his first army detail. 'The Western Evening Grosbeak' is described by Wm. Rogers Lord, and in 'Bird Clubs in America' Francis H. Allen tells of the Nuttall Club, the article being accompanied by a capital plate showing the President, Mr. William Brewster, and a number of the members. Frank M. Chapman contributes the second of the papers on 'How to Name the Birds,' which runs through the Corvidæ, and then follows 'The Christmas Bird Census' taken in many parts of the country, while Fred T. Morison contributes 'The Prize Crow Story.' In 'A Midwinter Meditation,' M. O. W. intimates that nature study may be so misdirected as to be decidedly harmful to the birds.

Popular Astronomy for March includes a paper entitled 'A Laboratory for General Astronomy,' by Miss Mary E. Byrd, of Smith College, and an illustrated article by Percival Lowell on the north polar rifts and the arctic canals on Mars. Other articles are