volumed treatise upon zoology upon which Professor Delage is at present engaged, and which promises to become one of the monumental works of its kind. The present volume is divided into four principal parts. The first deals with the facts of observation, and discusses in a comprehensive manner the morphology and physiology of the cell, of the individual, of degeneration, sex, correlation of parts, death, etc., and, under the head of 'Race,' the phenomena of heredity, variation and the formation of species. The author has read very widely and understandingly, and his exposition of the facts which he has to present is extremely clear, so that this book easily occupies a first place among those that must be consulted upon the general phenomena of biology.

The second part discusses the special theories which have been advanced by various writers conerning the interpretation of the facts reported in the first part. We find under this head, for instance, the manifold views which have been advanced concerning the interpretation of the karyokinetic figures, of the isotropism of the ovum, of the germ plasm and of telogeny. The third part discusses the general theories, and here the author's industry is most advantageously revealed, although, as it was but natural to anticipate, the attention given to French writers preponderates somewhat over that accorded to the writers of other countries. Here we find a historical review of the theories which have been advanced concerning the soul, formative force and the vital force, and a review of the historic discussion between the Spermatists and the Ovatists. We would direct attention especially to the review of the various theories which have been put forward, beginning with Buffon and continued by Darwin and many others, according to which protoplasm is supposed to contain units of living matter of minute size, to which units the vital phenomena are ultimately to be referred. Those who are not familiar with the history of this subject will be perhaps surprised to find how many and varied these theories of the constitution of protoplasm have been, and how slight a basis of observation and fact any of them have had for a foundation. The method in which the author proceeds in these analyses is very excellent. He gives first a summary of the particular theory, and then presents his critical observations upon the evidence and character of the theory itself, keeping thus his repertorial and judicial functions entirely distinct. The fourth part, which is the briefest, gives a review of the entire series of conceptions which seem to the author best founded and most coherent among themselves with regard to the manifold problems of heredity and general biology. The work closes with a valuable and very extensive bibliography. The author has carried out his purpose very successfully, and has produced a work which ought to be available for consultation in every biological laboratory.

Charles S. Minot.

Inorganic Chemistry according to the Periodic Law. By F. P. Venable, University of North Carolina, and Jas. Lewis Howe, Washington and Lee University. Easton, Pa., The Chemical Publishing Co. 1898. Pp. 266. Price, $1.50.

The authors of this text-book say in their preface: "The claim made in behalf of this book is that it takes the periodic system for its guiding principle throughout; * * * some text-books give brief mention of the law; others introduce it partially while still clinging to the old systems." How far the authors have departed from the plan thus outlined is shown by the table of contents.

The introductory chapter occupies thirty one pages. Molecules and atoms are treated on the first page, the atomic theory on the second, the gas laws and Avogadro's hypothesis on the fifth and sixth; valency and electro-chemical phenomena on the sixteenth and seventeenth, the periodic law on the eighteenth, Mendelejeff's table and the reason for accepting it on the nineteenth. Absurd as it may seem to discuss these topics before the simplest chemical fact has been demonstrated, it is unavoidable if the general plan of the book is carried out. In the following chapters the elements (74 pp.), halides (11 pp.), oxides and sulphides (103 pp.), nitrides, carbides, silicides and alloys (5 pp.), are treated with reference to the periodic law.

It must be remembered that this is an elementary text-book for beginners. The begin-

ner, after his introductory dose of theory, studies hydrogen on page 32, oxygen on page 46, but does not take up the study of water till he has studied all other common elements. He then finds on page 114, among the hydrides, the hydrides of oxygen and the customary elementary chapter on water. If the authors had preferred to regard water as an oxide of hydrogen it would have been found 33 pages farther on. Another example: Sulphur is discussed on page 50, hydrogen sulphide on page 120, sulphuric acid on page 220, nearly at the end of the book!

The present reviewer belongs to that number of chemists to whom the authors might refer in the words of their preface, as 'clinging to the remnants of past systems while introducing the law partially;' the reviewer made daily and constant reference to the law in lecture and laboratory at a time when the only text-book extant in which it received more than brief mention was Lothar Meyer's 'Moderne Theorien der Chemie.' The reviewer ventures to mention this to show that he does not underrate the value of the periodic system as a help in elementary instruction; yet it seems to him that the authors have followed the system so slavishly that their book is most unsatisfactory. The authors claim in their preface that they have obtained excellent results. Doubtless skilled teachers obtain good results by any method applied with personal enthusiasm and backed by thorough knowledge. In this case the reviewer believes that the good results were due to the ability of the authors as teachers, not to the method used.

E. R.

The Philippine Islands and Their People. By PROFESSOR D. C. WORCESTER. New York, The Macmillan Company. 1898. 8vo. Pp. xix + 529. 2 maps and 60 illustrations. Price, $4.00.

This volume is the outcome of two trips to the Philippine Islands. The first journey was made with Dr. Steere, in 1887–8, and work was prosecuted at that time for eleven months upon fifteen of the islands. In spite of many unpleasant experiences, the author and Dr. Bourns, who had been one of his companions upon the first trip, decided in 1890 to make a much longer stay in the group of islands. Upon this latter occasion they were occupied for two years and eight months with the careful study of the birds and mammals of the more important islands of the group. The volume combines the story of the two expeditions and is rich in the experiences of the author, while, as he says himself, he avoids 'talking shop,' from the biological standpoint, and in this fact consists one of the charms of the book, as a great deal of scientific information is imparted at the same time that the story of the trip is told in a very pleasant style. It is not often that the capacity for accurate description and pleasant narrative are combined as they are in this case.

The first chapter is devoted to a brief historical summary of the events between Magellan's eventful voyage and the fall of Manila last August.

The author's experiences in the city of Manila are given in Chapter II., which is largely devoted to a description of that quaint city. His diplomatic struggles with Spanish red-tape will remind any one who has happened to visit the Island of Cuba of the similarity of conditions existing in this other colony of Spain, where only the power of royal authority invoked by an order from some superior source is the means of overcoming the complaint known as the 'itching palm' so common in all that country's colonies. The author speaks quite pointedly of the tendency to provoke nervous prostration, which is induced by the inevitable delays, and closes a brilliant attack upon the whole system with the remark of a Spanish official: "In your country, time is gold; here it is boiled rice." A good illustration of the old story of Spanish official plundering is given in the case of an officer who succeeded in making a fortune of fifty or sixty thousand dollars upon an annual salary of five hundred and forty dollars.

The total land area of the group is estimated by the author at 114,000 square miles, of which the Islands of Luzon and Mindanao make up more than one-half. The author gives a very good idea of the character of the natives of each island as he takes it up in the course of the volume. Probably the most interesting, because