

pointed out above, there are a few omissions. There is, of course, room for diversity of opinion concerning the validity of some of the species which are given recognition, but no one can be personally familiar with the characters, history and synonymy of such a multitude of forms, and all that the author could do was to take the latest revision of each group as his guide. In adopting this course he has done all that could be expected and has produced a valuable *résumé* of the labors of specialists in many groups.

In fact, too much can hardly be said in favor of the catalogue. It represents an enormous amount of painstaking labor and will long remain a monument to the industry, patience and bibliographical skill of its author. It is indispensable to the student of mammals and its chief drawback is, perhaps, its high price (66 Marks), which may put the book beyond the reach of some who need it most.

T. S. PALMER.

WASHINGTON, D. C.

*The Genera and Species of Blastoidea, with a list of the Specimens in the British Museum of Natural History.* By F. A. BATHER. London. 1899. 8vo. Pp. x + 70.

This list "attempts to provide a complete index to every name that has ever been applied to a real or supposed Blastoid genus or species." It also gives the names now considered valid, and the synonyms with 'cross-references from the latter to the former.' It cites the literature, "the bibliographic details being placed under the name now valid. It catalogues all the specimens of Blastoidea contained in the Geological Department of the British Museum," and designates the specimens of historical interest, the types and figured specimens.

Bather's catalogue, like all of his work, is very detailed. The bibliographic references are not always mere title citations, but often give the important conclusions of writers, particularly those of synonymy. The list, however, 'is in no sense a revision' of the Blastoidea.

The important change in this list is the retention of *Nucleocrinus*, Conrad, 1842, in place of *Elæocrinus*, Roemer, 1851. *Orbitremites*, a

nomen nudum of Gray, 1840, was established by T. & T. Austin, 1842, and, therefore, displaces *Granatocrinites*, Troost, 1849 (nom. nud.), *Granatocrinus*, Hall, 1862, and Etheridge and Carpenter, 1886. *Orophocrinus*, von Seebach, 1864, although in general use, should be displaced by *Dimorphocrinus*, d'Orbigny, 1849. Bather does not make this change, although he disapproves of Etheridge's and Carpenter's reason for rejecting this name, namely, *Dimorphocrinus*, "has never been adopted by paleontologists on account of the erroneous and incomplete nature of his generic diagnosis." On the same ground other names now in use can be rejected. The reviewer prefers to accept *Dimorphocrinus*.

The total number of specimens of Blastoidea in the British Museum is 1,223, representing 73 species out of a total of about 166 listed species. "These figures speak for themselves. However numerous may be the specimens of Blastoidea in other museums, there can scarcely be any collection so representative of the class as a whole, or so rich in specimens of the highest scientific importance, as in that of the British Museum."

CHARLES SCHUCHERT.

U. S. NATIONAL MUSEUM.

*Grundlinien der Maritimen Meteorologie.* Von PROFESSOR DR. W. KÖPPEN, Abtheilungsvorsteher an der Deutschen Seewarte. Hamburg, Verlag von G. W. Neumayer Nachfolger. 1899. 8vo. Pp. vi + 83.

There has for some time been need of just such a book as Dr. Köppen has now given us. We have a brief and elementary presentation of the fundamental principles of marine meteorology, arranged by a master of the subject, in attractive form. While the book is intended especially for seamen, and as an introduction to the more advanced *Segelhandbücher* of the German Naval Observatory at Hamburg, students of meteorology in general will find it admirably suited to their own use. There are six chapters, the subjects of which are as follows: I., instruments; II., the correlation of the weather elements; III., the periodic variations of temperature, pressure, etc.; IV., the geographic distribution of weather phenomena,

and the climates of the earth's surface; V., the difficulties in the way of navigation due to storms, head winds, calms and fog; VI., the movements of the ocean, viz., waves and tides. Of these chapters the fifth seems to us perhaps the most generally useful in the book. It deals with the nature, seasons, tracks and characteristics of cyclones in the different oceans, and the rules for navigating when in the vicinity of a cyclone. The relation of the prevailing winds and calm belts to various sailing routes are clearly presented, and the prevalence of fog in different regions is briefly discussed.

In connection with the sailing directions, Köppen makes use of an ingenious device, modelled after Piddington's famous transparent storm cards in his classic 'Sailors' Horn Book for the Law of Storms.' Köppen's storm card consists of a transparent sheet of paper, on which are three figures. The first shows the winds around a cyclone in the Northern Hemisphere; the second shows the winds around an anticyclone in the Northern Hemisphere; and the third shows the characteristic isobaric types and accompanying wind changes during the easterly movement of ordinary weather conditions. By turning the transparent paper over, the same diagrams serve for the Southern Hemisphere.

Such a book as Köppen's *Grundlinien der Maritimen Meteorologie* should be translated into English, and it is to be hoped that the author will arrange to have an English edition published shortly.

R. DEC. WARD.

*Descriptive General Chemistry.* By S. E. TILLMAN, Professor in the U. S. Military Academy. New York, John Wiley & Sons. 1899. 2d Ed., p. 429.

This new aspirant for chemical honors has been written mainly for the use of the cadets of the U. S. Military Academy. In the language of the author "it has generally been the conclusion of those charged with this instruction at the Academy in the past that the laboratory method alone, or mainly, in so short a course, could not be made of as much value to the pupils as the method of making the *acquisition of knowledge* the essential feature, and that the best results could be reached through careful

study of the proper text, well-conducted recitations, accompanied by experimental and explanatory lectures." Accordingly "this book has been prepared to embody the substance and arrangement of a short chemical course for the *general* student. It aims to give a concise statement of the more fundamental principles of chemistry, together with that class of chemical information most essential to cultured men, and which will enable them to comprehend many ordinary natural phenomena, as well as to understand the more important applications of the science which are now so frequently met with. The book is not fitted nor intended for laboratory guidance."

It is an interesting production and merits high praise and a cordial reception from all interested in the promulgation of chemical science.

EDGAR F. SMITH.

*Elementary Studies in Chemistry.* By JOSEPH TORREY, JR., Harvard University. New York, Henry Holt & Co. 1899. Pp. 487.

Nearly every teacher of chemistry in time feels that even the best text-books which have been prepared are not just exactly what he desires. He is imbued with the idea that what he wishes the student to derive from a course of chemical instruction can be better obtained by some other method or plan than any previously proposed. In other words, he wishes to reach the goal in his own peculiar way. He knows what that goal represents, how he reached it, and is firmly convinced that by his method those placed in his charge can also gain it. The usual result of this reasoning is eventually a new book on chemistry. The author of the present volume, 'dedicated to my students, past and present,' has doubtless had his own experience in getting young men to profit by careful drill in chemical experimentation, etc., and in this new contribution outlines his method of instruction.

The reviewer has had great pleasure in following the different steps of the development, and is happy to add that in his humble judgment, Mr. Torrey has prepared a most valuable student guide, and deserves the congratulations of both students and teachers of the science.

EDGAR F. SMITH.