

ing accuracy and fullness of detail as to title, author, date, size, and place of publication. A short note of explanation or pertinent remark is in many cases added to the entries of the rare and little-known publications. Mr. Sherborn thus enumerates about 700 authors, with full title of book or memoir, carefully systematic abbreviation of titles of periodicals, and place of publication as given in the originals. Notices and general reviews having original information are included. Mr. Sherborn has examined all the works he has catalogued, with very few exceptions, and these are properly marked "not seen." The authors most prolific of memoirs are Brady, Carpenter, Carter, Dawson, De la Harpe, D'Orbigny, Ehrenberg, Folin, Fornasini, Gümbel, Haeusler, Hantken, Karrer, Jones, Munier-Chalmas, Neugeboren, Parker, Reuss, Robertson, Schlumberger, Schultze, Seguenza, Soldani, Stache, Terquem, Terrigi, Uhlig, Van den Broeck, Wallich, and Williamson. Former lists have evidently been carefully collated and corrected: and the life-dates (birth and death) of deceased authors have been entered as far as possible.

Several of the older papers are now catalogued for the first time, such as "Camerarius's papers, 1712 and 1717; Klein's, 1754; Schroeter's, 1803; and Wulfen's, 1791"; we also find "the correction of the hitherto inaccurate references to Spengler's papers: the original place of publication of Modée's letter to Soldani; and Ricca's 'Discorso,' with the engraved portrait of Soldani"; and, "among those of scientific importance, . . . the earlier issue of Fichtel and Möll (which carries back their scientific names five years); D'Orbigny's list of the Foraminifera of the Vienna Basin, published by J. von Hauer seven years before the full description appeared; the note on D'Orbigny's 'Planches inédites'; Boué's paper on the Nummulites; and Silvestri's rare and interesting paper on Soldani's 'Testaceographia.' For the first time, too, an endeavour has been made to enumerate the important memoirs published by the Hungarian authors with some approach to completeness."

The whole work has been conscientiously done, with scrupulous exactness; and the industrious author has made it a labour of love for several years, since he began to study Foraminifera. Having so full a knowledge of the subject, he might with advantage, we venture to think, give further aid to students and others by publishing an index and synonymy of all the recorded genera and species of Foraminifera.

In the preface to the bibliography, Mr. Sherborn fully acknowledges the help he has received from his many friends at home and abroad; and he refers to such analogous and collateral bibliographies as have been aids in his research. This work will without doubt be fully appreciated by biologist and palæontologist; and we cordially agree with the author in his remark that "sincere thanks are due to Mr. F. Justen (Dulau and Co.), to whose generosity and scientific sympathies I owe the publication of my manuscript." T. R. J.

*Earth Knowledge.* Part II. By W. J. Harrison, F.G.S., and H. R. Wakefield. (London: Blackie and Son, 1888.)

THIS book, in conjunction with the companion volume issued a few months ago, is chiefly intended for the use of students preparing for the Science and Art Department's examinations in Physiography. The book is far too small for its subject, and in consequence, only very bare outlines of the different branches of the subject can be given, and much is omitted which we should expect to find. It is scarcely possible, for instance, to give an adequate amount of information about the sun in half a dozen small pages; yet the authors have attempted to do this, and the result is what might be expected—namely, a very scanty chapter. No mention is made of the fact that the corona is of variable form, and since only one draw-

ing is given, a student would be likely to infer that its form is constant. Again, the possibility of observing prominences whenever the sun is visible, and the peculiarities and variability of sun-spot spectra are not touched upon at all. No chapter on the sun can be regarded as complete which does not treat of the various solar phenomena in relation to the sun-spot period.

Again, the classification of stars according to their spectra (p. 78) is not treated nearly so fully as its importance demands. Notwithstanding the fact that there are two distinct kinds of red stars, one giving indications of metallic fluting absorption, and the other of carbon absorption, we are simply told that in the red stars the lines are more numerous than in stars like Arcturus (p. 79).

On p. 126 we read:—"Although the sun's mass is so very much greater than that of the moon—being nearly sixty million times as great—yet the tide-producing force of the sun is only about seven-sixteenths that of the moon, because the sun is nearly 400 times farther off the earth than the moon." Although this statement is quite true, a little further explanation is necessary to make it consistent with the arithmetical fact that sixty millions is greater than the square of 400. It is only fair to say, however, that the importance of considering the differential attractions of the sun and moon on opposite sides of the earth, instead of the total attractions, is well brought out with regard to the precession of the equinoxes.

On the whole, the drawings are excellent, but that on p. 29, showing the action of the spectroscope, is rather misleading; we would remind the authors that the slit is usually placed in the principal focus of the collimating lens, and that there is nothing to converge the rays of light to a point inside the tube.

Without the aid of a well-informed teacher, the book is far from sufficient to fulfil the purpose for which it has been written.

*An Introduction to the Science and Practice of Photography.* By Chapman Jones, F.I.C., F.C.S. (London: Hliffe and Son, 1888.)

WE have here quite a new departure from the ordinary books on photography, the subject being treated not from the mechanical but from the scientific point of view, and the author has succeeded in placing before us a very useful work.

The volume is divided into three parts. The first consists of fifteen chapters, the more important among them treating of the transmission and intensity of light, reflection by plane and concave mirrors, refraction of light and the forms and properties of lenses, &c., concluding with a chapter on the spectroscope, colour-sensitiveness, and the absorption of light. In Part II. are described various forms of cameras, camera-stands, exposure-shutters, followed by some very interesting chapters on the history and special properties of the many and various forms of lenses. Part III. consists of twenty-four chapters extending over 100 pages, in which are described the manufacture of collodion and gelatino-bromide plates, and all the different modes of developing, printing, toning, &c., including carbon-printing, Woodburytype, and other photo-mechanical processes.

In the appendix are tables of English weights and measures, and a comparison of them with the metrical system, preceded by an explanation of the methods of testing lenses. The volume is well illustrated, and the varied information contained in it ought to give it a wide circulation.

*Numerical Examples in Practical Mechanics and Machine Design.* By Robert G. Blaine, M.E. (London: Cassell and Co., Limited, 1888.)

IN this volume there is an excellent collection of examples, the teaching power of which has already been