

OUR BOOK SHELF.

Résistance, Inductance et Capacité. By M. J. Rodet. Pp. x+257. (Paris: Gauthier-Villars, 1905.)

THIS book is devoted entirely to the three subjects which form the title, and it has evidently been the author's aim to include everything within the limits mentioned likely to be of use to engineers or physicists.

As a whole the author has succeeded, and has produced a valuable book of reference. The subjects are treated in the order mentioned. Under the heading of resistance, in addition to the usual constants, information is given as to the conductivities of insulators, solid and liquid, and the insulation due to a film of oil between a rotating shaft and its bearings. An account is given of the various rectifiers, including the Cooper-Hewitt.

Under the heading of inductance a full and clear statement is given of the usual phenomena, and the various methods of calculating coefficients of self- and mutual inductance are explained, but no mention is made of a rectangular coil such as is used in certain instruments of the dynamometer style. The inductance of cables is also studied, and a reference is made to the apparent increase of resistance of conductors traversed by alternating currents, but no mention is made of the internal self-induction of an iron rail, which is an important factor in the application of alternating currents to electric traction.

The initial portions of that part of the book which is devoted to the study of capacity follow the ordinary methods of exposition. Tables of specific inductive capacity of various substances are given, and information is presented as to the variation of this property with temperature. Following this, the distribution of the potential in a compound condenser is described, as, for instance, in a condenser in which the dielectric is composed of two plates of glass separated by a layer of air. (This matter is of practical importance in the building of high-voltage machines, as brought out by Messrs. Hobart and Turner in their recent book on insulating materials.) A brief reference is made to the electrodynamic condenser proposed by Mr. Swinburne, and a section is devoted to the study of capacity effects due to cables and overhead transmission lines.

The book would have been more complete if the researches of the late Dr. John Hopkinson had been referred to as to the specific inductive capacity of materials at very low temperature. For practical men, however, this volume contains almost everything that they are likely to want, and to them it can be thoroughly recommended.

Natural Phenomena. A Collection of Descriptive and Speculative Essays on some of the By-paths of Nature. By F. A. Black. Pp. xiv+366. (London and Edinburgh: Gall and Inglis, n.d.)

IN this book Mr. Black offers some essays which might well be of value to the student of physiography. Treatises on this subject are usually crammed very full of facts, and more interest might be awakened and a wider horizon opened to the student, if he reads such a work as this in connection with the ordinary text-books. There are ten essays altogether; four deal with some points connected with our own atmosphere, and four discuss problems of elementary astronomy, arising mainly from the motion of the earth on its axis. The remaining two treat of the Sargasso Sea and the Zodiacal Light with its allied phenomena. These seem to be highways rather than by-paths.

It would not be correct to say that Mr. Black is always exact in his descriptions; he is apt to be somewhat loose, and his book suggests that he has not consulted the most recent authorities. But he is never so far wrong as to be misleading. He may puzzle the student by apparent contradictions, due to the introduction or exclusion of circumstances which can exercise an important influence upon the point under consideration. Particularly would we caution the student to beware of those explanations for which the author himself is responsible, and in which he seeks to remove difficulties that have not yet received a satisfactory solution. An example will be found in the discussion on the semi-diurnal barometric inequality. The author seems, too, to have lost his way in the chapter on weather cycles; but the book is calculated to arouse interest, to stimulate curiosity, to promote further study, and on these grounds one may welcome its appearance. The illustrations are generally effective, and a very good index accompanies the book.

A Text-book of General Zoology. By Dr. Henry R. Linville and Dr. Henry A. Kelly. Pp. x+462; illustrated. (London and Boston: Ginn and Company, 1906.) Price 7s. 6d.

THIS addition to the long shelf of text-books of zoology has some fresh features. Practical experience has led the authors to begin with the Arthropods, work down to the Protozoa, and then ascend the vertebrate series. The study of insects has been found the best introduction to the broad problems of zoology, and in the earlier chapters a modified inductive method is pursued. About half-way through the book, after the student has become familiar with systems of organs, he is introduced to physiological principles, illustrated with special reference to the earthworm. Throughout the book prominence is given to the study of animal behaviour and the environmental conditions. Thus there is a feeling of fresh air through the chapters. The authors have reacted from the position of identifying zoology with comparative anatomy, and the introduction to the science which they have presented seems to us, not only interesting, but educationally wholesome. Most of the illustrations are original, and many of them are beautiful.

Science Readers. Book VII. By Vincent T. Murché. Pp. 299. (London: Macmillan and Co., Ltd., 1906.) Price 1s. 9d.

Object Lessons in Elementary Science. Stage VII. By Vincent T. Murché. New and revised edition. Pp. xvi+322. (London: Macmillan and Co., Ltd., 1906.) Price 2s.

THESE books deal with elementary physics. The first is intended for pupils to read in class, lesson by lesson, after they have attended an explanatory and experimental demonstration from the teacher on the subject in hand. The second book contains notes of lessons designed only for the use of teachers. The notes are accompanied by helpful advice, blackboard sketches, and many other evidences of the wide experience of the author. Both volumes are attractively illustrated and well printed, though it may well be doubted if the bewildering profusion of types in the second book adds to its helpfulness. The author is a master of simplicity of expression, and the information he supplies is, as a rule, trustworthy. The books deserve the careful consideration of teachers of very elementary classes.