

OUR BOOK SHELF.

Light and Sound: a Text-book for Colleges and Technical Schools. By W. S. Franklin and Barry Macnutt. Pp. viii+344. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1909.) Price 5s. net.

In writing a text-book, an author generally chooses definitely between two methods of exposition: he either writes a small book, and confines his attention to the most elementary parts of the subject treated of; or else he writes a more pretentious work, in which most branches of the subject receive adequate attention.

The authors of the text-book now under review have followed a middle course. The fundamental principles of Sound and Light are discussed with great care, and numerous practical applications of these principles are described; for the explanation of complicated phenomena, the student is referred to more advanced text-books. The book opens with a very thoughtful exposition of the wave theory, illustrated by reference to water waves, sound waves, and waves in an elastic solid; and the subject of Light is developed wholly in accordance with the wave theory. Numerous optical instruments, including the standard forms of photographic lenses, are described and illustrated; and a clear but necessarily incomplete theory is given of the defects of lenses, and their compensation. Considerable attention is devoted to the subject of photometry and illumination; technical students should carefully study the chapter devoted to this part of the subject. The fundamental facts of polarisation are explained clearly and well.

In connection with sound, the simple phenomena, which are generally discussed in elementary text-books, are dealt with concisely. A very interesting chapter is devoted to the theory of music, and an account is given of Sabine's researches on the audibility of sound in rooms of various sizes; here, once more, technical students will find much to interest them. Altogether the book should prove very useful.

E. EDSEK.

Kraft: das ist animalische, mechanische, soziale Energien und deren Bedeutung für die Machtentfaltung der Staaten. By Prof. Dr. E. Reyer. Zweite Auflage. Pp. xvi+471. (Leipzig: W. Engelmann, 1909.) Price 8 marks.

Soziale Mächte: als Ergänzung der Arbeit über "Kraft." Same author and publisher. Pp. 111. (1908.) Price 1.60 marks.

THE first edition of Dr. Reyer's "Kraft" was noticed at length in NATURE (vol. lxxviii., p. 660) shortly after publication, and to that notice we must refer the reader for details as to the scope of the work. The present, second, edition has been somewhat extended, but does not appear to have been rewritten to any considerable extent, and it retains all the faults of the earlier issue. The same lack of orderly arrangement distracts the reader, the same lack of references renders the work almost valueless to the serious student, and the same absence of "the scales and the names of the plotted quantities" continues to characterise the diagrams. The bibliography remains remarkable both for its inclusions and its omissions, and it still contains even the two remarkable entries to which attention was directed in the notice of the first edition—"Produktion und consum. of timbre in foreign countries (blue book)," and "Statesman's yearbook, Statist. Abstracts (mit statistischen Tabellen)"—the latter entry apparently confusing the "Statesman's Yearbook" with the "Statistical Abstracts."

The title of the second volume named above is, at the present date, misleading. When first published—the title-page bears the date 1908, although the cover

is dated 1909—the title may have been correct, for the volume is apparently a supplement to the first edition of "Kraft." It is not supplementary to the second edition, but a mere reprint of pp. 339-447. In these pages Dr. Reyer considers such matters as migration, wages and conditions of labour, the struggle for better conditions of life, personal energies and their contributions to civilisation.

Notes on the Electric Smelting of Iron and Steel.

By Dr. W. F. Smeeth. Bulletin No. 5, Mysore Geological Department. Pp. vii+136; maps. (Bangalore: Government Press, 1909.) Price 2 rupees.

ELECTRIC steel melting and refining is now an established industry, but the electric smelting of pig-iron from the ore has recently entered on a new phase, namely, the commercially successful. The writer has had given to him, in confidence, figures of costs in connection with an electric furnace making charcoal pig-iron, with permission to mention the facts without the figures. It is clear that under conditions where the fuel is charcoal, and is becoming increasingly scarce and expensive, so far as can be judged from experience with a furnace of commercial size working for months, the smelting of high-grade ore into charcoal pig-iron is proving profitable. Only the balance sheet is a safe guide, but this test is about to be applied on quite a large scale.

The present bulletin embodies the technical portions of a report prepared by Dr. Smeeth at the request of the Government of the Maharajah of Mysore. A short description of the Stassano furnace is given, and details of several charges of steel made in the furnace in 1908 from pig-iron and scrap with the usual additions. Chapter iii. contains details of an attempt to make high-quality steel, carbon 0.2 to 0.3 per cent., in the Stassano furnace from very impure ore, a serious task. The author calculates that to produce steel from the ore, the electric furnace will require only about one-third of the amount of charcoal necessary for smelting with fuel furnaces, but (p. 45) "The sulphur is high (0.24 per cent.) and renders the steel quite unfit for use." Trial C showed a better analysis, but the mechanical test given by the steel was not good. In part ii. of the bulletin, materials and costs at Mysore are considered, and the opinion is expressed that the manufacture of steel castings, steel forgings, railway tyres, and even rails could be carried on successfully there, and at a profit. The author evidently has courage. A folding geological map of the Bababudan iron-ore area is enclosed in a pocket on the cover.

A. Mc.W.

Psychism. By M. Hume. Pp. 157. (London and Felling-on-Tyne: Walter Scott Publishing Co., Ltd., n.d.) Price 2s. 6d. net.

MRS. HUME begins with a curious and rather incoherent theory respecting the "Trinity of Man" (Matter, Intelligence, Force; or, in another aspect, Reason, Intuition, and Soul), but she becomes decidedly interesting when she proceeds to describe her own experiences. These have been visions, dreams, or other phenomena by which a warning of an impending event—e.g. the death of a friend at a distance—has been conveyed. The agency is believed by the author to be her own subconscious self, which possesses clairvoyant and other powers. The theory propounded closely approaches that of the leading investigators in these domains, but we would suggest that the terminology of Myers is preferable to that of T. J. Hudson, who, moreover, is an unsafe guide, being apt to rear a large structure of theory on a small or insecure foundation of fact. The book is well written and nicely got up.

J. A. H.