

cation, these measurements afford results of considerable interest, and according to the writer's experience the transition-point method is capable of the same degree of accuracy as the familiar method of freezing-point depression. Notwithstanding small deficiencies of this nature, the book must be ranked as a valuable contribution to the series of monographs on selected chapters of physical chemistry.

H. M. D.

THE FUNDAMENTALS OF THREE-COLOUR PHOTOGRAPHY.

Three-Colour Photography: with Special Reference to Three-Colour Printing and Similar Processes.

By Arthur Freiherrn von Hübl. Translated by H. O. Klein. Pp. 138. (London: Percy Lund, Humphries and Co., Ltd., 1915.) Price 7s. 6d.

THE scope of this volume is much more limited than the title might be supposed to indicate. The author deals with the theories of light and colour so far as concerns the subject, and in a thoroughly practical way with the sensitising of plates, the making and choice of colour filters, and the choice of inks, but the actual printing processes themselves are barely mentioned. Screen-plate processes, such as the use of autochrome and similar plates, are not dealt with. We have therefore a treatise on the fundamentals of three-colour photography. We must first express our disappointments. At page 95 there are eight absorption spectra, showing the effect of each dye in two concentrations, but we cannot find any indication as to the dyes to which these spectra refer. There are references to "Supplement IV.," a coloured plate which should contain some most interesting results, but the plate is not anywhere to be found. At page 80 we are told that "for accurate work it is necessary to measure the densities with the aid of Marten's polarisation photometer," as if this were the only instrument suitable for this purpose, or the only accurate photometer applicable. Of course, there are many forms of photometer available, and not everyone would prefer the Marten instrument.

Having said so much, we have nothing to express but a vivid appreciation of the value of the treatise. The formulæ given are not innumerable, but they are the select few chosen by one who is thoroughly conversant with the subject. It is interesting to note that the author is not one who struggles after theoretical perfection at any price, as some seem to do, perhaps because of their want of acquaintance with the practical side of the art. He says quite clearly that three-colour photography is based upon sound theoretical principles, and fully justified from a theoretical standpoint. But on the other hand,

it is more or less immaterial whether or not the photographic colour analysis is absolutely correct, and that "fine-etching or retouching is the greatest factor in solving the problem of three-colour process work." One may be rather sorry to see so high an authority take up such a position, but he justifies his opinion with regard to inks, by pointing out that the theoretical inks are so "very bright and fiery," that the colour scheme is very sensitive, and therefore the slightest error in the balance of the pigments makes it impossible to produce neutral greys or black under ordinary printing conditions. The use of a pure yellow, an almost blackish blue, and a very deep red allows of slight variations in their proportional intensities without greatly influencing the result, and are to be preferred, although they reduce, to a certain extent, the range of colours that can be reproduced. Moreover, artists use blackish (not pure) colours, and the "colour magnificence of a painting is not due to the use of brilliant pigments, but to the effects of colour contrast." The pigments of modified colour have the further advantage of being less liable to change on exposure than those that more nearly approach the theoretical requirements. In spite of this apparent qualification of the indications of theory pure and simple, the theory is and remains sound, and it is only the uncertainties of practical work that require a little concession.

C. J.

MEDICINES AND THEIR MANIPULATION.

(1) *The Extra Pharmacopœia of Martindale and Westcott.* Revised by Dr. W. H. Martindale and W. W. Westcott. Sixteenth Edition. Vol. i. Pp. xl+1113. Price 14s. net. Vol. ii. Pp. viii+469. Price 7s. net. (London: H. K. Lewis, 1915.)

(2) *Squire's Pocket Companion to the British Pharmacopœia.* By P. W. Squire. Second edition. (London: J. and A. Churchill, 1915.) Price 10s. 6d. net.

(1) THE first volume of Martindale and Westcott's *Extra Pharmacopœia* contains all matters relating to the chemical and therapeutic properties of those "extra-pharmacopœial" chemicals and drugs which have attracted particular attention in the medical world. It includes details of their manufacture and modes of administration, their medicinal uses, pharmacy and solubilities, and references to current literature. This volume also contains, *inter alia*, a chapter on vaccines, supplying much new information, the section on organo-therapy, the supplementary list of drugs, and a list of the most potent antiseptics based on researches by the authors. Volume ii. contains the latest methods of assaying and testing