

REVIEWS.

THEORIE UND PRAXIS DER MASSANALYSE. Von ALEXANDER CLASSEN. Unter Mitwirkung von H. Cloeren. Leipzig. 1912. Akademische Verlagsgesellschaft, m.b.H. Pp. i-ix + 1-772. Price 32 marks.

The author of this work, it will be remembered, edited and revised two editions of Mohr's classical treatise "Titrimethoden." Recognising, however, that modern developments in chemical science have to a great extent modified our conceptions of the way in which chemical reactions occur, he decided that, instead of revising the seventh edition of Mohr's treatise, he would write an entirely new book, remodelled in accordance with modern theories. Professor Classen's reputation is at once a guarantee that the task which he set himself has been executed in a satisfactory manner; and of the work under review it may be said that, as a student's handbook, for which it is primarily intended, it is in most respects excellent, whilst it will also be found of use to the practising chemist.

* In applying this method it is advisable to use within these limits a smaller quantity of fat cheese and a larger one of skimmed cheese.

Volumetric methods are, with very few exceptions, based on scientific principles, so that they only became possible after stoichiometrical relations had been established. The pioneer in the elaboration of these methods was undoubtedly Gay Lussac. He it was who first devised methods of alkalimetry and acidimetry, as well as those of estimating chlorine, whilst the degree of accuracy of which these methods are capable first became evident after the classical work of Stas on the determination of the atomic weight of silver. A treatise such as the one under review should therefore be something more than an empirical guide book, and it will be conceded that Professor Classen has dealt liberally with the theoretical side of the subject. Indeed, in some cases the writer ventures to think that the text might have been shortened considerably with advantage to the reader. This applies particularly in the sections in which the methods are described, where many well-known and even self-obvious equations are given, including ordinary double decompositions. The sections dealing with the history and principles of volumetric methods and on the theory of indicators, although very lengthy, deserve special mention for their clearness and lucidity. Under indicators, however, something should, in the writer's opinion, have been mentioned of the tautomerism which some of these substances exhibit (*cf.* J. T. Hewitt, *ANALYST*, 1908, **33**, 85). The author is, however, throughout immersed in the ionic hypothesis, to the exclusion of any other.

The inorganic methods described form a useful collection, and many of them have been devised or checked in the author's laboratory at the Technical High School, Aachen, but it is surprising to find so few references to British work. There is an important point to which attention may be called—namely, that in no instance is the limit of accuracy of a method stated; nor are any of the methods of estimating one and the same substance compared as to their relative accuracy.

As regards empirical methods, the book is decidedly disappointing. Thus, twelve pages are devoted to a description of various modifications of the soap test for estimating the hardness of water, and about two and a half pages to alkalimetric and acidimetric methods for this purpose. After all this the author very properly remarks that the only reliable method of estimating hardness in a water is by a gravimetric analysis of the mineral matter. The estimation of reducing sugars by Fehling's solution is carried no further than the work of Soxhlet in 1880; and, indeed, the author seems unaware that anything has been done in volumetric analysis since that time, for he gives a reference to Wein's gravimetric tables, making no mention of the fact, however, that one of them—that referring to maltose—is inaccurate.

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BLEACHING AND DYEING OF VEGETABLE FIBROUS MATERIALS. By JULIUS HÜBNER.
London: Constable and Co., Ltd. 1912. Pp. xiii+434, including Index.
Parts 18, with 96 illustrations. Price 14s. net.

It is necessary on occasion for the analyst to have some knowledge of the practical methods of procedure involved in certain industries. The work in question is one which will supply the necessary information in the case of cotton, so far as this can be imparted in such a manner. It opens with a section dealing with the vegetable fibres, including those manufactured artificially from cellulose. The follow-

ing section deals with the analysis of water and its purification, and the analyst need not expect to gain special information from this or from the following one dealing with chemicals and mordants. The chapter on bleaching is, as might be expected, quite up to date, and gives in outline a satisfactory account of modern practice.

The important operation of mercerising is next considered, and it is pointed out that Persoz, in 1846, preceded Mercer in a description of the contraction, or shrinkage, of a cotton fabric under the action of caustic soda solution. It was not until 1895 that Thomas and Provost obtained a permanent lustre on cotton by mercerising under tension, although Lowe in this country had previously patented a similar process without apparently realising its importance.

A short chapter deals with the production of mineral colours on vegetable fibres, including, of course, the well-known khaki. The natural (vegetable) colouring matters are then considered, and also the artificial or synthetic colouring matters which have played such a leading part in modern dyeing. This section includes many practical details in actual manipulation, and a full account of those dyes which are applied to mordanting fibres and the so-called "oxidation" colours.

An account of the actual machinery used in dyeing operations then follows, and, finally, the testing of dyes and fibres is dealt with. This section, which is probably the one to which the general analyst will turn, occupies only thirteen pages, and therefore cannot deal in any detail with the subject under review, the actual tables concerned with the identification of dyestuffs only taking up about four pages in all. The question of the identification of fibres is also compressed into about one page. The section dealing with actual analysis can therefore only present in outline the methods which might be adopted in practice.

The work is primarily intended, as Professor Meldola points out in an interesting preface, as a practical textbook; and, so far as it is possible to compress detail into the space available, serves its purpose.

The illustrations are above the average, and indicate in a satisfactory manner the nature of the plant used.

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