

presently renders untenable. As examples in point, one need only recall the testing of foodstuffs for arsenic, and the alleged conversion of this element into antimony. Wherefore, when the chemist buys his chemicals let him remember the legal tag above quoted, and not trust too implicitly to the manufacturer who supplies them.

The book before us will help to minimise the labour involved in satisfying oneself on this matter. It deals with some hundreds of reagents used by the chemist, and with a few of those generally employed by the microscopist. As regards its plan, the substances are arranged in alphabetical order, beginning with "acetic acid" and ending with "zinc sulphate." Under each heading are described, very briefly, a few of the more prominent characters of the reagent, such as its formula, molecular weight, boiling point, specific gravity, or crystalline form. Then follow, as a rule, a number of "tests for impurities," in which are indicated the probable foreign substances to be met with in the article under examination, and the characteristic methods of detecting them. A paragraph or two dealing with the "quantitative estimation" of the reagent is added in those cases where the addition is applicable. Following this come notes upon "uses" or "uses and storage," in which mention is made of the purpose for which the reagent is generally required, and hints given as to how it should be kept—*e.g.* whether protected from light, in a cool place, under oil, and so on. Finally the "commercial varieties" of the substance are shortly indicated.

On account of the number of articles dealt with, the information afforded is necessarily for the most part very brief, and is always concisely put. Fairly full descriptions, however, are given in the case of some of the more important reagents: thus ten pages are devoted to alcohols, six to ether, and eight to hydrochloric acid; whilst tables of the strengths corresponding to various values of specific gravity are appended to the sections dealing with such reagents as acetic acid, ammonia, alcohol, and the mineral acids. References, and useful ones, are frequently given to literature in which further information is to be found; and in place of the original German sources the translators have very considerably indicated abstracts and papers to be found in English journals and text-books.

All the ordinary reagents are described, and also a number of those less frequently used. As regards the inclusion of the latter, the present writer has tested the volume in respect of a few of the less common reagents, such as the persulphates, iodeosin, and nitroso- β -naphthol (which latter, by the way, can be recommended for the separation of cobalt from nickel), and finds them duly mentioned except in the case of the persulphate.

The book is hardly one which calls for much criticism. The value of such a work consists in its bringing conveniently together the chief data pertaining to the various substances, so far as they are criteria of purity. If a good selection is made, and if the information is accurate, the book saves labour and fulfils its purpose. Judged by this standard the volume can be unreservedly commended.

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OUR BOOK SHELF.

Text-book of Electrochemistry. By Svante Arrhenius. Translated by John McCrae. Pp. xi + 344. (London: Longmans and Co., 1902.) Price 9s. 6d. net.

THIS work, by the chief founder of modern electrochemical theory, is worthy of a hearty welcome in its English form. It is distinguished from other works on the same subject by being at once more thorough and more simple, the difference being specially apparent in the chapters dealing with potential and electromotive force. Too often the treatment of this branch of the subject leaves the impression (on the student of chemistry at least) that a simple and important result is arrived at from no premisses in particular by some unconvincing mathematical hocus-pocus, wholly devoid of concrete meaning. Prof. Arrhenius is necessarily somewhat mathematical, but the physical significance of each step is so carefully explained that no attentive student of physics or chemistry, with the most rudimentary knowledge of the calculus, can fail to gain a clear idea of the process of reasoning, and, if need be, to reproduce it with understanding. Whilst we have this very desirable treatment of theoretical matters, the practical side of the subject is no less satisfactorily dealt with. In small compass, an immense amount of well-selected and clearly-put information is conveyed; for example, in the two pages which are devoted to the electric arc, the essential features of the phenomenon are given with a precision and conciseness infrequent in physical text-books. The chapter on electroanalysis affords a similar instance of happy exposition. Throughout the book, and especially where matters of recent controversy are under discussion, there is manifested a temperateness of language and sobriety of judgment which cannot be too highly commended.

The first two chapters of the volume give an account of fundamental physical and chemical conceptions, and of the older electrochemical theories. The next five chapters are chiefly concerned with osmotic pressure and the thermodynamical deductions from it, the general conditions of equilibrium, and the velocity of chemical actions. Chapters viii.-xii. are devoted to electrolytic dissociation and the deductions to be drawn from that theory. In chapters xiii.-xv., electromotive force is dealt with; and in the last two chapters are taken up the practical subjects of electroanalysis and the development of heat by the electric current.

The present translation has been made from the German edition, which is a somewhat expanded form of the Swedish original. The English version is well done, and we have to thank Dr. McCrae in addition for an excellent index and a very useful appendix of references.

J. W.

A Manual of Indian Timbers. By T. S. Gamble, M.A., C.I.E., F.R.S., F.L.S. Pp. xxiii + 856; illustrated by photographs of wood sections. New (second) and revised edition. (London: Sampson Low, Marston and Co., Ltd., 1902.)

THE first edition of this important work appeared in 1881, giving the results of investigations made by Sir Dietrich Brandis and his assistants, Messrs. Gamble and Smythies. It was edited by Mr. Gamble, and it contained descriptions of 906 species of Indian timbers. The new edition has been entirely prepared by Mr. Gamble; it deals with about 1450 species, including all, or nearly all, really important timber-woods. The total number of species of trees, shrubs and climbers found in India and Ceylon is estimated to amount to about 5000,