

Chemistry

Hydrochemische Methoden in der Limnologie: mit besonderer Berücksichtigung der Verfahren von L. W. Winkler. Von Dr. Rezsö Maucha. (Die Binnengewässer: Einzeldarstellungen aus der Limnologie und ihren Nachbargebieten, herausgegeben von Prof. Dr. August Thienemann, Band 12.) Pp. x+173. (Stuttgart: E. Schweizerbart'sche Verlagsbuchhandlung (Erwin Nägele) G.m.b.H., 1932.) 18 gold marks.

In the rapid advance of fresh-water investigations during the last two or three decades, chemistry has played an important part and many analytical processes which are applicable in the field have been devised. This book gives an account of the various methods employed in a complete water analysis. Particular attention is devoted to the determination of dissolved oxygen and to the various precautions and modifications necessary in the application of the Winkler technique. Methods are considered for the determination of carbonate, silicate, phosphate, sulphate, chloride and iodide, of calcium, magnesium, potassium, sodium and iron, and of the organic substances in water and their decomposition products.

The volume is useful in that it brings together accounts of methods which are scattered in the literature, and it offers many practical suggestions which should result in the avoidance by the modern limnologist of mistakes and misapplications in chemical technique.

L'Azéotropisme: la tension de vapeur, des mélanges de liquides; Bibliographie. Par Maurice Lecat. Pp. viii+134. (Bruxelles: Maurice Lamertin, 1932.) n.p.

MAURICE LECAT has compiled a bibliography of the phenomenon of azeotropism. The main subject is the formation of mixtures of constant boiling point, which was studied with so much interest and success in the case of aqueous acids by Roscoe in 1880; but other papers, dealing with the surface tension of mixtures of liquids, have also been included in the three lists which compose the bibliography. The principal list is in the form of an alphabetical index of authors, but there is a second list in order of dates and a third list under the titles of different journals. These supplementary lists refer back to the principal list, to which cross references are given by means of serial numbers, running up to 1,283 in the final entry under the name Zmaczyński. The author is himself a distinguished worker in this field, since his own writings are responsible for 49 of these numbers; but he has rendered an important service to science and industry by bringing together so large a collection of references, from Dalton (1813) to the autumn of 1932. The subject index corresponding to the bibliography now under review consists of a series of "Tables of Binary Azeotropes" of which 14 have already been issued and others are in preparation. T. M. L.

Elementary Organic Chemistry. By B. C. L. Kemp. (Dent's Modern Science Series.) Pp. ix+356+8 plates. (London and Toronto: J. M. Dent and Sons, Ltd., 1933.) 5s.

MR. KEMP'S book is intended for pupils preparing for higher certificate, university scholarship, Army entrance and 1st M. B. examinations. A good feature is the inclusion of practical work, each experiment being capable of performance by a pupil of average capacity within the limits of one hour. The practical directions are concise, but include necessary details, and questions are provided.

The text is clearly written and reasonably up-to-date, although the formulæ of the sugars require modification. The use of arrows instead of equals signs in equations encourages young students to leave equations unbalanced. Since some space is devoted to a discussion of the electronic theory of valency, it is a pity that the obsolete structural formulæ for the nitro-compounds are given on pp. 154 and 250: the correct formulation is easily understood by elementary students. The formula of ammonium chloride on p. 272 is also incorrect.

Engineering

Industrial Electric Heating. By N. R. Stansel. Pp. vii+444. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1933.) 31s. net.

WE agree with the author that thermal engineering requires some knowledge of all the industrial sciences. The use of electric heat is no longer confined merely to the thermal units it conveys. It is now considered as a method of manufacture which brings great scientific aid for the production of better products. The milk bottle has a small unit value but a life of severe service. Its life depends in a large measure upon the proper application of heat to remove the strain from the glass. The more nearly perfect this operation the greater the insurance against breakage in service. The temperature cycle—almost as exact as a laboratory standard—gives a durability to the milk bottle that justifies the name 'unbreakable' bottle sometimes given to it.

During a study of a wide range of electric heat installations the comments of operators of that type of equipment were noteworthy. Electric heat can be applied with great ease wherever the location may be or whatever the quantity required. In the shoe-making industry the heating units may be smaller than a finger but in large steel melting furnaces they may weigh many tons.

The author writes interestingly and gives good descriptions of "resistor" and arc furnaces. The chapter on the atmospheres of "resistor" furnaces is instructive. It is stated that the volume of the gas at room temperature which is given off from an ingot of average steel when heated to 900° C. is nearly the same as the volume of the steel. Everyone interested in manufacture will find this book of interest.