

lyte," by giving especial attention to results obtained since the publication of that work and to subjects not there treated. Among other subjects, separate chapters are devoted to transference numbers, the theory of dissociation, special applications of conductivity measurements, the conductivity of solutions of mixed electrolytes, and finally a welcome chapter on conductivity in non-aqueous solutions.

The author shows a wide acquaintance with the literature of the subject, though one serious omission must be pointed out. In summarizing the recent determinations of conductivity no mention is made of the work of Whetham on aqueous solutions at the freezing-point.<sup>1</sup> The author does not claim to give a complete review of work appearing after the year 1903. Thus some important investigations of more recent date, such as the research of Noyes and Coolidge on the conductivity of aqueous solutions at high temperatures, are omitted.

The author is in general careful in his statements of fact but an occasional error may be found. On page 133 it is stated that the conductivity of pure metallic oxides is not affected by the addition of other metallic oxides, while the experiments of Nernst and his students prove just the opposite conclusion. On page 40, where the value for the specific conductivity of pure water is given, the unit is the specific conductivity of mercury, and not the reciprocal Siemens unit as stated.

Unfortunately, some of the definitions and many of the theoretical discussions can hardly be regarded as satisfactory. Here vagueness of style frequently obscures the meaning. This is particularly marked in the chapter entitled "Influence of Temperature and Pressure."

However, the work is primarily a compilation of recent measurements of conductivity, many of which have been recalculated in rational units and put in tabular form, and as such it will prove a handy book of reference, especially to those who lack a reading knowledge of German. A satisfactory index is appended.

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THE PRODUCTION OF ALUMINUM AND ITS INDUSTRIAL USE. By ADOLPHE MINET. Translated, with additions, by LEONARD WALDO, S.D. (Harv.). New York: John Wiley & Sons. 1905. Price, \$2.50.

This little volume will prove to be very entertaining to those

<sup>1</sup> Z. physik. Chem. 33, 344 (1900).

who are interested in the problems of electro-metallurgy. It presents the views of one who for years has occupied himself with the solution of a single problem. It gives, too, what may be termed the French view-point. It keeps constantly in the front what has been done in France, and this fact instead of detracting, really enhances its value to those who wish to study the question in the broadest way. It might almost be said that of the very many methods which have been proposed for the separation of aluminium but three, those of Minet, Heroult and Hall, are discussed at any length, and are apparently regarded as possessing any value. It is true that Minet alludes to the numerous methods which have been suggested from time to time. A few of these touch closely upon his own thought; he naturally devotes the greatest attention to the methods of Heroult and Hall, because they come nearest to his own ideas.

In its German dress, this little volume of Minet received rather sharp criticism. If one considers all the facts in the case, this was not deserved. One should bear in mind that an author is apt to think most highly of his own efforts, the efforts of his friends, or those of his countrymen. So that if Minet failed to fully credit all who have made studies of the electro-metallurgy of aluminium, he should not be criticized too severely, but rather be looked upon as giving us the view-point of a Frenchman. By combining a series of such view-points, offered by representatives of various countries, we get a very excellent picture of the problem as a whole.

The translator will find a few things which he will, no doubt, correct in the future edition of the book. It is a little awkward to speak of caustic sodium hydrate when one has in mind NaOH. Several other slips of this kind will be noticed throughout the text.

The appendix contains a very interesting review of the aluminium problem, by the translator, in which he has strongly emphasized the fact that to the efforts of the Cowles brothers many later procedures are indebted for their inception and development.

No student of chemistry who peruses this little volume of Minet will lay it aside without the thought that it contains much which is new, suggestive, and helpful. It is worthy of the study of all who are interested in electro-metallurgy, in particular or in electrochemistry in general.

EDGAR F. SMITH.