

discover, important topics like bead reactions, the solubility of magnesium hydroxide in ammonium chloride, the difference between double salts and salts of complex acids, the barium carbonate method, and the "solubility product" are not explained at all. The "normal solution" is defined (p. 112) as some physical chemists still unfortunately use the term (one mol per liter), and not as the analyst defines it. The behavior of the hydroxides of zinc (p. 389) and aluminum (p. 410) is ascribed to differing influences of acids and bases on the mode of ionization of the hydroxide, an assumption quite out of harmony with known facts. The precipitation of  $As_2S_3$  (p. 259) in concentrated hydrochloric acid is attributed to the interaction of hydrogen sulphide and arsenic acid, although  $AsCl_5$  is demonstrated to be the active substance by the result. Both of these cases might have furnished opportunities for beautiful applications of the theory of equilibrium. The paragraphs on indicators (p. 212) are misleading. The pink color of phenolphthalein in alkaline solution is not due to the ion of phenolphthalein itself, but to that of an isomeric colored acid.<sup>1</sup> Contrary to the statements in the book, this indicator is one of the best for weak acids, such as carbonic and phosphoric acids, provided they are not (like boric acid) weaker acids than the isomer of phenolphthalein itself. The statement that this indicator cannot be used for titrating weak bases like ammonium hydroxide is correct, but the reason given is not. The cause of its lack of delicateness is the repression of the OH ions of the remaining hydroxide by the ammonium salts produced by the first stages of the titration.<sup>2</sup>

The book is worthy of a cordial reception, and it is to be hoped that a call for a second edition will speedily give opportunity for the needed modifications.

ALEXANDER SMITH.

INORGANIC CHEMISTRY SYLLABUS. BY HUBERT C. CAREL, B.S., Assistant Professor in the University of Minnesota. Third Edition. Minneapolis: H. W. Wilson, Publisher. 1902. 182 pp.

This book has been prepared for the students of the Freshman classes of the medical department of the University of Minnesota, and is a condensed compendium of the salient facts of descriptive inorganic chemistry. A few pages here and there are given to theoretical chemistry. The book suffers somewhat from errors,

<sup>1</sup> This Journal, 24, 558.

<sup>2</sup> *Am. Chem. J.*, 23, 406.

typographical and other, but contains an excellent index, which increases its value to medical students.

The problem of the best method of teaching chemistry in a medical school is as yet unsolved. A large proportion of men enter the school with little or no knowledge of chemistry, and are expected at the end of one year's study to find their way successfully through the intricate mazes of physiological chemistry. Alas for the teacher who is expected to perform this miracle!

J. L. H.

**KALENDER FÜR ELECTROCHEMIKER SOWIE TECHNISCHE CHEMIKER UND PHYSIKER.** VII Jahrgang, 1903. Mit einer Beilage. Edited by Dr. A. Newburger. xxxi + 583 + 448. Berlin: M. Krayn. Price, 4 marks.

In this valuable little book the editor has certainly succeeded admirably in his attempt to bring together material which is of value not only to the technical but also to the scientific worker. The separation of the technical from the theoretical branch has been more marked probably in electrochemistry than in any other subject and certainly the technical side has not gained by it. Through such works as this, we may look in the near future for a more intimate connection between the two branches of the subject which can not fail to be of great advantage to electrochemistry. There are but two criticisms to be made upon the make-up of the book, the lack of an index, and the binding of the Beilage as a separate volume, although its table of contents is given in the Kalender.

J. LIVINGSTON R. MORGAN.

**BOTANY AND PHARMACOGNOSY.** BY HENRY KRAEMER, Professor of Botany and Pharmacognosy and Director of the Microscopical Laboratories in the Philadelphia College of Pharmacy. Published by the author. 384 pp.

The growing use of the compound microscope in the critical examination of powdered vegetable drugs has developed into a distinct branch of pharmaceutical study. It is perhaps needless to say that, in making a critical examination of vegetable powders, one must be familiar with the vegetable histological elements which make up the vegetable fabric, for no kind of pulverization will completely destroy the cell and obliterate its diagnostic features. The present volume, after dealing with plant morphology in Part I (100 pages), takes up the study of crude drugs, first giving their gross characteristics as found in their whole and dried condition. Following this is a scheme for the study of the