

many minor points of manipulation are treated at unnecessary length. These might have been explained once for all beforehand.

A good feature is the mention of the occurrence in nature and in commerce of compounds of the element under discussion, a feature which is often ignored in books of its scope.

The chapters on the separations and detection of acids and bases are well written.

FRED'K W. SPANUTIUS.

"THERMODYNAMICS OF REVERSIBLE CYCLES IN GASES AND SATURATED VAPORS." BY M. I. PUPIN, PH.D.; edited by Max Osterberg. 114 pp. New York: John Wiley & Sons. 1894.

This little volume contains a "full synopsis of a ten weeks' undergraduate course of lectures," arranged (with the author's sanction) by a student of Columbia College. The course is designed as a theoretical introduction to a practical course in heat engines, not to a general course in physical chemistry. The Calculus is used throughout, but the mathematical notation is somewhat relieved by illustrations. The two laws are discussed successively with reference to perfect gases and Carnot's cycle. The integral and the differential equations of the indicator diagram are quite happily compared to Kepler's laws of planetary orbits as a whole, and Newton's successful analysis of these orbits into their minutest parts under the law of gravitation.

Steam is taken as the familiar type of saturated vapors; special emphasis is placed on the discussion of adiabatic and isothermal expansion; and reasons are given that the prevailing types of steam engines are not strictly reversible.

R. B. W.

SELECT TABLES FROM THE U. S. PHARMACOPOEIA. 1890. REPRINTED FOR READY REFERENCE IN DAILY PRACTICE. Published by the Committee of Revision. Philadelphia: Agents, P. Blakiston, Son and Company. 1893.

The list comprises: Alphabetical List of Volumetric Assays; Alcoholometric Table, according to E. R. Squibb; Saturation Tables; Equivalents of Weights and Measures, customary and metric; Table of Thermometric Equivalents; List of the Prin-

cial Pharmacopoeial Chemicals and Reagents, with their molecular weights; and Table of Atomic weights, according to L. Meyer and K. Seubert.

These respective tables are on 8vo. heavy paper for mounting on cardboard and hanging in the office or laboratory.

While the chemist may not use the whole Pharmacopoeia, these tables are just that part which will be found very useful to him. We cannot refrain from suggesting, however, that the practical chemist would make no mistake in familiarizing himself with the chemical portions of the whole book.

H. T.

NOTES.

Preparation of Standard Iodine Solutions.—The usual directions given for the preparation of standard solutions of iodine, to grind in a mortar, with a small quantity of water, the proper proportions of iodine and potassium iodide, transfer to the graduate-vessel and dilute, may be improved upon, both as to time required and danger of accidental loss of material, by the following method :

Iodine and potassium iodide, in the ratio of about two to three respectively, are carefully transferred to a graduate-flask and a weight of water added not greater than the weight of iodine used. The flask is then to be shaken until the scales of iodine disappear, care being taken not to splash the solution upon the stopper of the vessel. The required dilution is best made slowly with constant shaking. Three to five minutes are usually sufficient for the preparation of the solution and the rapidity and ease with which it may be accomplished largely depends upon using a minimum amount of water at first.

February 6, 1894.

DAVID HANCOCK.

Meeting of the Association of Official Agricultural Chemists.—The Executive Committee of the Association of Official Agricultural Chemists has decided to call the Annual Meeting of the Association for August 23, 24, and 25, 1894. The meetings will