

cism of methods described, without the well-known precautions fully stated, would engender a chemist whose work would be of no value to himself or to anyone else. Part I will advance the true science of chemistry in France ; Part II will hinder it.

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STUDIES IN CHEMICAL DYNAMICS. BY J. H. VAN 'T HOFF. Revised and enlarged by DR. ERNST COHEN. Translated by THOMAS EWAN, M.Sc., Ph.D. Large 8vo. vi + 286 pp. Easton, Pa. : Chemical Publishing Co. ; Amsterdam : F. Muller & Co. ; London : Williams & Norgate. 1896. Price, \$2.50.

Few works in chemistry have been more stimulating in their nature, and more productive of extended investigation of the most important character, than the simple, unpretentious "*Études de Dynamique Chimique*," which van 't Hoff published in 1883. It is a matter of general congratulation that a new edition of this work has appeared, and furthermore that it has been promptly issued in an English translation.

The volume before us possesses all of the attractions characteristic of its predecessor. It is not a text-book. It is simply an admirable monograph dealing with several of the most fundamental problems engaging the attention of the rapidly increasing number of chemists specially interested in the determination of the laws governing the rate of chemical change, the measurement of chemical affinity, and the general topic of chemical equilibrium. While these three subjects are not treated exhaustively, they are still discussed so fully that no better handbook could be used for guidance in the fields of research in question. The fullness of description, the ample details on apparatus for experimental investigation, the wealth of illustrations, the charms of the mathematical deductions, all render the volume simply invaluable, certainly for the beginner, and possibly for the more advanced worker in physical chemistry.

Some of the leading features of this new edition are: the recent work on the tartrates ; the discussion of Cohen's concentration cell ; the calculation of the change of solubility with the temperature ; the summary of all known methods for determining inversion temperatures ; the elaborate and instructive researches on the oxidation of aldehyde, phosphorus, and sulphur ; the many new data on the change of the equilibrium constant with

the temperatures ; the effect of pressure on condensed systems ; and the detailed discussion of the methods of determining the transition temperature.

It is to be regretted that several important phases of the general subjects have not been brought into discussion : the topic of catalytic actions ; the applications of the electrolytic dissociation theory to the phenomena of equilibrium ; the translator's own admirable work on the freezing-points of sulphuric acid solutions ; the author's extended investigations on dilute solutions ; and several others.

Here and there the need of more careful proof-reading is evident. The general typography of the book is, however, exceptionally fine, and the illustrations most effective. The fullness of the bibliographic features is particularly commendable. As we welcome so admirable an aid and guide to experimental work in physical chemistry, we cannot but regret that, thus far, there are so few centers in our own country, where the factors of experience, instrumental equipment, and enthusiasm combine to render America a noteworthy contributor in this field. Many indications, however, point to a rapid and early improvement in this respect.

THOMAS H. NORTON.

PRINCIPLES AND PRACTICE OF AGRICULTURAL ANALYSIS. BY HARVEY W. WILEY, Chemist U. S. Dept. of Agriculture. VOL. III, AGRICULTURAL PRODUCTS. xii + 665 pp. Easton, Pa.: Chemical Publishing Co. 1897. Price \$3.75.

This volume completes the most exhaustive work ever published on agricultural analysis. One of the sub-titles states that it is a manual for the examination of soils, fertilizers, and agricultural products. It is more properly a treatise on these subjects.

The volume under review is arranged in seven parts. Part I deals with the collection, preparation, and preservation of samples, the drying of organic bodies, the determination of ash, and the general description of the objects and methods of extraction by solvents. The full discussion of the subject of collecting and drying samples is timely and if the suggestions of the author had been more generally followed, the analyses of agricultural products that are found in various works of reference would have had a far greater value.