REVIEWS.

THE PLANT ALKALOIDS. By THOMAS ANDERSON HENRY, D.Sc. (Lond.), Superintendent of Laboratories, Scientific and Technical Department, Imperial Institute, London. I. and A. Churchill. 1913. Pp. 466. Price 18s. net.

This work will prove of great interest and value to all interested in the plant alkaloids. The author has dealt with a difficult subject in as scientific a manner as

is possible with the present state of our knowledge of this important class of compounds, many of which have been little investigated. He points out the difficulty of giving an exact definition of the term "alkaloid," and he uses the generally understood description—viz., "A relatively complex basic substance, occurring naturally, and possessing some physiological action." He also shows that this definition cannot be rigidly applied, and draws attention to the close association between vegetable and animal alkaloids.

The author attempts a classification of the plant alkaloids based on their chemical constitution. He divides them into eight groups, each group being characterised by the particular nucleus possessed by its respective members—*e.g.*, Group I. is the Pryolle group, Group II. that of Pyridine, Group IV. that of Quinoline, etc. The ninth group comprises alkaloids of unknown constitution, and the description of these occupies 111 pages—*i.e.*, about a quarter of the book. It is thus seen what a large amount of research remains to be done before the constitution of many important alkaloids has been determined.

The manner of dealing with the description of the alkaloids is excellent. In every case practically all the important references to original papers are given with the dates, so that the work has a considerable historical interest. The constitution of these alkaloids where known is clearly demonstrated by graphic formulæ, and the reactions by which the formula has been deduced in each case are pointed out. Of especial interest and importance are the references to the American, English, and German Pharmacopœias, the important tests and methods of estimation of which are given in full detail. The physiological action of the various alkaloids is accurately and fully given. The author, in his preface, acknowledges the help he has received in this part of the work from Professor Cushny's "Textbook of Pharmacology and Therapeutics."

The tests for the various alkaloids are given. In some cases these tests might be given in greater detail and more fully—for example, under Morphine there is no reference to Frohde's test, and the iodic acid test is very incompletely described. No mention is made of the distinctive tests between morphine and its derivatives, heroin and dionin. The recently described methods of extracting morphine by means of phenol and cresols are not mentioned. Under the tests for strychnine it would have been well to mention the physiological test of producing convulsions by injection of the solution into the abdominal cavity or dorsal lymph sac of a small frog. This test is so delicate as to detect $\frac{1}{30000}$ grain of the alkaloid, and is of great value in toxicological work. The author includes the alkaloids of curare under the quinoline group with strychnine. So little is known of the constitution of these alkaloids that they might well be placed in Group IX. amongst the alkaloids of unknown constitution.

Dr. Henry is to be warmly congratulated on the scientific and able manner in which he has dealt with an important and difficult branch of chemistry. His work will prove of great value to those interested in organic chemistry, and it will be of especial value and interest to pharmacists, pharmacologists, and those engaged in toxicological chemistry.

W. H. WILLCOX.

ORGANIC CHEMISTRY FOR ADVANCED STUDENTS. Vol. II. By JULIUS B. COHEN, PH.D., B.Sc., F.R.S. London: Edward Arnold. Pp. vii + 427. Price 16s. net.

Professor Cohen published the first volume of this work about six years ago, and instead of writing a systematic textbook of organic chemistry, discussed several topics of special interest; the same course has been followed in the second volume. The author states in the preface that the volume published in 1907 embodied the substance of a course of lectures given at that time to senior students; the course has since been modified, and the volume now before us is the outcome. Organic chemistry is evidently presented to Leeds students in an attractive manner, and the reader can but admire the detailed attention devoted by Professor Cohen to the matter treated.

The work is divided into five chapters. The first of these deals with the *valency of carbon*, and affords most interesting reading. The question of carbon possessing a lower valency than four is discussed; needless to say, the work of Nef and the subject of "triphenylmethyl" receive considerable attention. After dealing with the "double bond" and "free valency," Professor Cohen proceeds with an examination of the nature of valency, the ideas of Werner, Thomson, Stark, Abegg, and Bodländer coming in for attention; this forms a very noteworthy feature in a work professing to deal with organic chemistry.

Chapter II., on the Nature of Organic Reactions, occupies about 160 pages, and deals with a variety of subjects—catalytic processes, condensation, and ring formation may perhaps be specially mentioned. Whilst this chapter is the most "organic" in the book, a good deal of general theory is introduced.

The Dynamics of Organic Reactions form the subject-matter of the third chapter, which has been written by Dr. H. M. Dawson; this and the succeeding chapter on Physical Properties and Structure, form a distinctive feature of the book. The line that at one time separated the physical chemist from the organic chemist has fortunately been broken down, and an increasing number of workers are interesting themselves with the physics of organic compounds.

Colour and Structure are dealt with separately in Chapter V., Fluorescence and the Photo-Chemistry of Organic Compounds following in natural sequence. Though less than sixty pages in length, this chapter gives an excellent idea of the lines of thought followed by different workers.

Professor Cohen's book is got up in good style and is very free from misprints; it concludes with indexes arranged according to subjects and authors. A useful feature is the list of references given at the end of each chapter; these refer to standard works dealing with the subjects which have been treated, the references to individual papers are to be found in the usual manner in footnotes. The work will well repay careful attention, and one may hope that when Professor Cohen next revises his lecture course, another volume may be added to the series.

J. T. HEWITT.