

with a comprehensive statement of the known collectors and its distribution within and without the Belgian Congo. Many interesting notes are furnished on the depth below ground-level at which the tubers are seated, on their edibility and method of preparation for food; poisonous properties; bulbil production and self-protective measures. Of peculiar interest and value are the discussions on the origin, evolution and "ennoblement" (improvement and refinement by selective cultivation) of the most-prized yams. It is indicated that some of the problems involved can only be solved in the field and that "the paper is intended to direct all who are able to study the Congo Dioscoreas alive to points worthy of their particular attention".

A debt of gratitude is due to Mr. Burkill for collating much valuable information from many sources and adding the results of his own patient and extensive research, both in the herbarium and in the field, which has cleared up several obscurities.

CHEMISTRY

Perkin and Kipping's Organic Chemistry

By Prof. F. Stanley Kipping and Dr. F. Barry Kipping. Part 3. Revised edition. Pp. viii+615-1030. (London and Edinburgh: W. & R. Chambers, Ltd., 1939.) 9s.

OF late years there has been a marked dearth of works dealing with advanced organic chemistry in a manner suitable for students reading for an honours degree in chemistry. Part 3 of "Perkin and Kipping's Organic Chemistry" can be recommended with confidence to such students and also to research workers. It is a handy volume comprising some four hundred pages and yet not too bulky for an ordinary pocket. Its twenty-three chapters afford concise and up-to-date treatments of a surprisingly large number of subjects of current importance in organic chemistry, including physical properties, isomerism (four chapters) and isomeric change, carbohydrates (two chapters), terpenes and related groups (three chapters), carotenoids, anthocyanins, metallic ketals, aromatic substitution, etc. The chapter on heterocyclic compounds (12 pp.) is limited to azoles, diazines and vitamin B. In this new edition the configurational formulæ of the sugars (which gave rise to difficulties as expressed in the first edition) have been revised, and two new chapters have been added: one of these deals with the theory of resonance (12 pp.) and the other with sterols, bile acids and other steroids (21 pp.). The text and formulæ are neatly printed, and there is a good index.

A Text-Book of Quantitative Inorganic Analysis Theory and Practice. By Dr. Arthur I. Vogel. Pp. xix+856. (London, New York and Toronto: Longmans, Green & Co., Ltd., 1939.) 18s.

AS would be expected of a teacher with wide experience of students of all grades, Dr. Vogel has produced in this book a notable contribution to

chemical literature and a valuable guide to those engaged in chemical study.

The book is divided into six chapters dealing respectively with the theoretical basis of quantitative analysis, the experimental technique required, volumetric, gravimetric, colorimetric and gas analyses. In each of these chapters, the reader will discover a wealth of detail not only of the more classical methods of analysis but also of the most up-to-date modifications and discoveries. Most of the new methods have been tried out in the author's own laboratory. In addition, there is a comprehensive appendix containing chemical data which will be of great value to practising analytical chemists, whilst teachers of chemistry will find much interest in the suggested schemes of study for various examinations.

Dr. Vogel's book can be confidently recommended to students of all grades as a sound, up-to-date and accurate treatise on methods of analysis, a study of which will be amply sufficient for all examinations up to the honours degree. The book should also be on the bookshelf of all industrial analytical chemists, who will find it a useful reference book in modern methods of analysis.

Physikalische Methoden der analytischen Chemie

Herausgegeben von W. Bottger. Teil 3: Chromatographie, Verdampfungsanalyse, Spektroskopie, Konduktometrie, Photoelektrometrie, Polarographie, Potentiometrie. Pp. xx+836. (Leipzig: Akademische Verlagsgesellschaft m.b.H., 1939.) 65 gold marks.

THIS book is more than merely a description of the application of a number of physical methods to analytical chemistry. This is due to the fact that the editors have taken a very broad view of what constitutes analytical chemistry. The consequence is that much pure physical chemistry finds its way into the volume. There is, of course, emphasis on experimental technique.

The main subjects treated are chromatographic analysis, analysis by fractional evaporation, spectroscopic analysis, photometric methods and analysis by conductometric, polarographic and potentiometric methods. It is absolutely impossible in a short review even to give a list of the contents, for they are so varied. The aim of each contributor is not only to describe methods but also to give enough practical details so that the reader may conduct the experiments with success. Moreover, each section of the book is copiously provided with references to recent literature. For example, the section on potentiometric methods includes at least one thousand references.

There is much in this book to interest physical chemists as well as those who wish to find the most useful analytical technique for any given problem. The index and table of contents make the search among such a mass of material an easy business. The volume is well printed and bound but is rather expensive.

H. W. M.