

of the main classes of organo-silicon compounds—halides, hydrides, oxygen compounds of different types, cyclic compounds, etc. The disparities in length between chapters may perhaps reflect the extent to which some classes of derivative are ripe for investigation. Ample use is made, throughout, of the general concepts developed in the first part, though the organization of the material largely follows the traditional organic chemist's approach. Every chapter is followed by the appropriate bibliography, and the total coverage of the literature is very extensive indeed.

If the first two books are devoted principally to facts, *Unnatural Products*, which embodies Dr. Rochow's Priestley Lectures before Pennsylvania State University, is concerned with ideas. In it he lets his ideas range widely, and develops a theme that he stated briefly in his foreword to the book by Meals and Lewis. In brief, the abundance of silicon in the universe is the direct consequence of its nuclear structure; the chemistry is determined by its electronic structure. The very abundance of silicon challenges technological man to explore and exploit the differences between the familiar compounds of carbon and substances, having no counterpart in Nature, based on the chemistry of silicon. Only by extending our chemical knowledge, so as to make kinetically possible the sort of reaction paths that look attractive thermodynamically, will it be feasible to make the best use of the world's resources of raw materials and energy. In his lectures, Rochow ranged over the modern inorganic chemist's approach to his subject, embracing everything from classical descriptive chemistry, through thermodynamics, to molecular spectroscopy. The lectures afforded an unusual opportunity for a distinguished chemist to show how he thinks about his work. The result (except for one lecture on intramolecular motions and energy barriers, which must have made singularly hard going for his audience) is a very readable little book.

J. S. ANDERSON

metric analysis, typical preparations, etc.), but these already published give concise qualitative tests for each element, and précis the chief organic preparations.

It may be said at once that the volumes more than cover their field, yet not so amply as to make them intimidating to the good advanced-level student. Their large pages and carefully considered typographical plan make them easy to read and to refer to: diagrams, though on the small side and drawn in 'stencil' fashion, are sufficiently clear. Equations are prominently displayed, mainly in structural form in the organic volume, and ionically, where appropriate, in the inorganic.

Each volume is complete in itself: thus, physical chemistry topics, atomic structure and valency, etc., are fully treated in the physical volume, but enough of each is carried into the others to illuminate discussions there. The historical approach is pleasing, without ever becoming oppressive. Much information of interest to the keen student, and not otherwise accessible save by very wide reading, is to be gleaned from the footnotes. The up-to-date treatment may be judged by the adoption of  $C=12$  as the basis for atomic weights: few school text-books have reached this yet.

Misprints are negligible, though the close formulation of ions as, for example,  $SO_4^{2-}$  and  $N_2H_5^+Cl_2^-$ , instead of in the more open standard form, is rather irritating.

Collaboration between an experienced schoolmaster and a university lecturer seems most effective for work at this 'frontier' level. My own preference is for the physical volume; I feel some slight regret that the authors did not take this opportunity to develop in print the simple approach to organic chemistry recommended by Sir Robert Robinson in a presidential address to the Science Masters' Association about eight years ago, which many of us have found by experience to be more easily assimilable than the wholly systematic impact.

CHARLES HOLT

## TRILOGY OF CHEMISTRY

### Inorganic Chemistry

An Intermediate Text. By C. W. Wood and Dr. A. K. Holliday. Pp. viii+393.

### Organic Chemistry

An Introductory Text. By C. W. Wood and Dr. A. K. Holliday. Pp. xxii+321.

### Physical Chemistry

An Intermediate Text. By C. W. Wood and Dr. A. K. Holliday. Pp. viii+322.

(London: Butterworth and Co. (Publishers), Ltd., 1960.) 21s. each.

THESE three attractively produced books form a series intended to meet the chemistry requirements at Advanced and Scholarship levels of the General Certificate of Education of the various examining boards. They should be useful also to first-year undergraduates (not only those reading for a degree in chemistry) and to students preparing for Higher National Certificate, graduateship of the Royal Institute of Chemistry, etc., in colleges of technology.

The authors give no hint of a later volume to cover the concomitant practical work (qualitative and volu-

## TREATISE ON ANALYTICAL CHEMISTRY

### Treatise on Analytical Chemistry

A Comprehensive Account in Three Parts. Edited by I. M. Kolthoff and Philip J. Elving, assisted by Ernest B. Sandell. Part I: Theory and Practice, Vol. 1. Pp. xxvi+809. (New York: Interscience Encyclopedia, Inc., 1959. Distributed by Interscience Publishers, Inc., New York; and Interscience Publishers, Ltd., London.) 133s.

THIS *Treatise on Analytical Chemistry* is to be a major work extending to many volumes. Part I, which is to consist of eight or nine volumes, is devoted to theory and practice. Part II, the analytical chemistry of the elements, will deal extensively with organic as well as inorganic analysis in a series comprising some ten volumes. Part III, which is as yet not fully planned, will be concerned with the analyses of industrial products. The first volume of this last part will be divided into two sections, one dealing with the philosophy relating to the significance and organization of analytical chemistry and the other with specifications and standards;