Valency: Classical and Modern. Second Edition. By W. G. PALMER, Sc.D., D.Sc., Fellow of St. John's College, Cambridge University Lecturer in Chemistry. Cambridge University Press, 32 East 57th Street, New York 22, N. Y. 1959. ix + 244 pp. 14.5 + 22 cm. Price, $5.50.

Nowadays, many a student studies atomic and molecular structure in terms of the orbitals of the electrons with little idea of the origins of these ideas or the reasons for rejecting earlier explanations. The reading of Palmer's "Valency" will cure this omission; it begins with a well-written history of valence and an account of the development of the modern ideas of valence and structure.

In later sections, it shows the structures (based largely on diffraction methods) of a great variety of interesting compounds ranging from ionic crystals to the boranes, and reconciles these with modern theory. These sections are a goldmine of information.

Modern ideas about atomic and molecular orbitals and the nature of bonding are presented in enough descriptive detail so that the reader is introduced to the language, but he will be hard put to apply these ideas in extension or criticism of the results presented. This completely non-mathematical book could be a valuable supplement to a more rigorous and quantitative treatment.

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Physik und Chemie der Grenzflächen. Zweiter Band. Die Phänomene in Besonderen. By K. L. WOLF. Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersorf, Germany. 1959. 360 pp. 16.5 × 23.5 cm. Price, DM. 58. —.

This book is composed of a number of chapters that, like encyclopedia articles, are related only by the common theme of surfaces. The emphasis is physical and mathematical rather than chemical. Many of the subjects discussed at some length can be classed as curiosities, and although not "important" by virtue of the interest manifested in them currently, belong in this kind of work.

This is particularly true of the first section of four chapters which is about such things as the shape of soap films stretched on wires hanging from supports, or touching one another as bubble clusters. This section is full of antique references to Gauss and other great mathematicians. It appears to be one of the specialities of the author, and seems to be authoritative. There are many interesting illustrations that show, among other things, the development of drops in a falling stream of water.

The second group of chapters is about films on liquids, and discusses the usual topics in the fashion of Langmuir, Harkins and others. There are of course many adequate discussions of this sort in English. A definite attempt is made to be historical, here as in other parts of the book; for that reason many of the references and examples are less useful for other purposes.

The longest portion of the book follows; it is about adsorption at the interface. All types are considered, and the treatment includes a version of the thermodynamics of interfaces; one wonders what is in the first or "general" volume, if this fundamental topic spills over into this volume. The treatment of adsorption on solids is essentially pre-war, although it has been sprinkled, at random, with references to most of the modern workers. This section concludes with an inadequate survey of nucleation, epitaxy and rate of solution, and growth of crystals. All these important topics, and others, are dismissed in ten pages. In general, rate processes are sacrificed to thermodynamics in the book.

The last group of chapters continues the encyclopedic survey of a number of odd effects, such as the camphor motor boat, and the mechanism of thixotropy.

There is nothing really chemical in the book, such as catalysis, rate of oxidation of surfaces, or chemisorption. It is the kind of book that a large library should buy, but which probably will be of little interest to the individual chemist.

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Methoden der Organischen Chemie. (Houben-Weyl). Vierte, Völlig Neu Gestaltete Auflage. Band V. Teil 4 Halogenverbindungen. Brom- und Jodverbindungen. Herstellung. Chlor-, Brom- und Jodverbindungen. Reaktivität-Umwandlung. Edited by EUGEN MÜLLER, Tübingen. Georg Thieme Verlag, Herdweg 63, Stuttgart, Germany. 1960. xlvii + 894 pp. 18 × 26 cm. Price, Moleskin DM. 180.00. Vorbestellpreis DM. 162 00.

Volume V of the compendium is devoted to hydrocarbons and halogen compounds. The wealth of material imposed the need for subdivision into four parts, of which No. 4, dealing with the preparation of bromo- and iodocompounds is now at hand. Fluoro- and chlorocompounds are treated in part 3, which also will include a discussion of the reactivity of fluoro-derivatives, whereas the reactivity of the more closely related compounds of chlorine, bromine and iodine is dealt with in an outstanding chapter of the present book. This section, on the one hand, describes the broad classes of transformations of which halogen compounds are capable—elimination of halogen or hydrogen halide, and exchange of halogen, and on the other hand presents a concise discussion of current views on reaction mechanisms that should prove very helpful to the preparative chemist in planning synthetic approaches.

The preparative sections begin with surveys of brominating and iodinating agents, their preparation and applicability, together with practical hints as to their use. The halogen compounds are classed according to their mode of synthesis: by addition of halogen, by exchange against hydrogen or the other atoms or groups, and by special methods of degradation or synthesis, as, *e.g.*, the brominating decarboxylation of silver carboxylates developed by the Hunsdieckers, or the haloform reactions.

Selection of proper examples must have been a particularly vexing problem to the authors of the present volume, because many fields, like steroids, polyisoprenoid compounds, terpenes, have given rise to special methods for making bromides and iodides. In my opinion, this problem has, again, been wisely and adequately solved and volume V/4 is to be welcomed as another valuable addition to the series.

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Non-Benzenoid Aromatic Compounds. Edited by DAVID GINSBURG. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. xii + 543 pp. 16 × 23.5 cm. Price, $18.00.

This book constitutes a valuable addition to the literature of organic chemistry. A brief foreword by Sir Robert Robinson adds interest to this work since his early contributions were important to the development of our present day concept of an aromatic compound. The first chapter by D. P. Craig of University College (London) describes the meaning of the term "Aromaticity" from the viewpoint of the theoretical chemist, and π-electron theories are applied to benzenoid and non-benzenoid aromatic compounds. The second chapter deals with cyclobutadiene and related compounds and was written by Wilson Baker and J. F. W. McOmie of Bristol University. Attempts to prepare cyclobutadiene, the work of Roberts and his students on phenylcyclobutenone, Cava and Napier's work in the benzocyclobutene series and a description of the chemistry of diphenylene, the interesting hydrocarbon first prepared by Lothrop, are the chief topics considered in this carefully prepared chapter. The third chapter deals with compounds whose aromaticity resides in a ring of five carbon atoms and especially with metal compounds containing such a system. The chemistry of ferrocene and related compounds constitutes the major portion of this chapter, which was written by P. L. Pauson of Sheffield University. An admirable feature of this book is the attempt which has been made to include the most recent literature. In accordance with this policy, addenda describing work which appeared after the chapters were written are included. Pentalene and Heptalene and related compounds are considered in the fourth chapter which was prepared by Ernst D. Bergmann (Hebrew University, Jerusalem). One cannot fail to admire the