

involves only an enumeration of the individual substances and of their insecticidal activity. No description of the excellent synthetic efforts in the pyrethrum field is given nor has any particular effort been made to record the structure proof of any of the substances under discussion. While it is understandable that the correct structure (1954) of cevine is not yet given, there is no excuse for showing (p. 463) for jervine a discarded steroid formulation which had already been revised in 1951. Since this review carries the earliest submission date (November 1952), some additions in proof (of the type carried out so effectively in the cortisone chapter) would have been justified. As an example, reference to the article "Isolation of the Toxic Principles of Mamey" by Morris and Pagan (*THIS JOURNAL*, 75, 1489 (1953)) in the section (pp. 464-465) on Mamey could have been carried out easily during the proof correction.

The physical appearance and especially the excellence and abundance of structural formulas (over 300 in chapter IV) is noteworthy. Particularly striking is the fact that nearly all of the chapters cover the literature up to January 1953, a remarkable feat of up-to-dateness in a book which appeared in the autumn of the same year. The editor is to be congratulated on this tenth volume and it can safely be expected that the over-all excellence will be maintained in future issues of this series.

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**Chemistry of the Defect Solid State.** By A. L. G. REES, D.Sc., Ph.D., Chemical Physics Section, Division of Industrial Chemistry, Commonwealth Scientific and Industrial Research Organization, Melbourne. Methuen and Co., Ltd., London, England, and John Wiley and Sons Inc., 440 Fourth Avenue, New York 16, N. Y., 1954. viii + 136 pp. 11 × 17 cm. Price, \$2.00.

The avowed purpose of this monograph is to outline in general terms the role played by defects in solid state reactions. As the author points out, there is a great need for an outline of this type to clarify the thinking of classically trained chemists. Unfortunately, this undertaking is similar to making a map of the weather; certain features remain the same, but others are changing rapidly. Consequently, this book, apparently written early in 1953, is already outdated in some respects. The most notable omission is the theory and effect of dislocations.

Chapter I briefly summarizes the nature of the defects in solid systems and introduces a system of nomenclature which is used throughout the book. This system permits a description of defect structure by quasi-chemical formulas. The reviewer admits the desirability of such nomenclature but questions whether it should appear in this book. The suggested system has not been generally used by workers in the field, and it may not be ultimately accepted by them.

Chapter II applies the statistical thermodynamics of defects to the problem of the transport of matter through crystalline solids. Non-stoichiometric compounds, particularly those formed by placing a crystal in contact with the vapor of one of its components, are discussed. The discussion of the quantum theory is facilitated by a number of helpful diagrams.

In Chapter III, the experimental methods used in the study of solid state phenomena are briefly described. The experimental results are related to the theoretical concepts developed in the previous chapters. This discussion is naturally incomplete, and many of the elegant techniques developed by students of semi-conductor electronics have been omitted. Nevertheless, it is a useful introduction to the experimental approach.

The remainder of the book is devoted to consideration of the various types of solid reactions. Corrosion, photochemical and thermal decompositions, and heterogeneous catalysis are discussed in some detail. The photochemical dissociation example is unfortunate. Recent work has shown that

negative ion-vacancies probably do not play an important role in the photographic process.

This book will interest those who wish a brief summary of the physics and physical chemistry of defect solids. Those interested in a more detailed treatment are referred to the recent works of Kittel, Jost, Read and Seitz.

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**Advances in Virus Research.** Vol. I. Edited by KENNETH M. SMITH, Virus Research Unit, Moltano Institute, Cambridge, England, and MAX A. LAUFFER, Department of Biophysics, University of Pittsburgh, Pittsburgh, Pennsylvania. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y., 1953. vii + 362 pp. 165. × 23.5 cm. Price, \$8.00.

As the Editors point out, virus research has attracted specialists from widely diversified scientific disciplines. In fact, it would be difficult to find another area of scientific endeavor which has commanded the attention of as many scientists with such varied backgrounds and approaches. This being so, some sort of integration of the field seems desirable and it is hoped that this new series can supply the stimulus for such integration. However, the first volume does not go very far in this direction. Despite its coverage of viruses affecting man, animals, insects, plants and bacteria, too little stress is laid on the interrelationships among the various types of viruses and the methods employed in their study.

It might be expected that such a collection of articles would exhibit considerable variation not only in quality but in approach. In the essay on virus nucleic acids, Markham presents his own point of view of the field and discusses his own rather considerable contributions to our knowledge of these important constituents of viruses. One may find fault, as this reviewer does, with his offhand dismissal of physical measurements on nucleic acids as being "misleading at the best." He also might wonder how an article in the "Advances in Virus Research" could omit reference to the paper by Cohen and Stanley on the physical chemistry of the ribonucleic acid of tobacco mosaic virus since that particular nucleic acid, with regard to molecular weight, seems almost unique among ribonucleic acids. In contrast to this individual approach to one segment of virus research is the rather straightforward but relatively indiscriminating summary on bacteriophages by Epstein. There are other illustrations of the heterogeneity of the contributions to this volume. On the one hand, the essay by Black on viruses that infect both plants and insects and the one by Bergold on insect viruses deal largely with their own work; whereas the articles by Henle on influenza virus and by Melnick on poliomyelitis are largely exhaustive reviews of the literature. It is regrettable that the interesting article by Bennett on interactions between viruses was restricted to plant viruses while interference phenomena in other viral systems are discussed in some detail in other essays in the same volume. We might hope that future volumes will discuss important phenomena like interference and hemagglutination not in connection with each individual virus, but rather in terms of the fundamental phenomena themselves. Even though there have been many extensive reviews on the purification and properties of animal viruses, Sharp succeeds in presenting a worthwhile point of view and discussing some of the newer methods.

Only if the future volumes of this new series can stimulate the unification of our outlook on the broad field of virus research, can the addition of "Advances in Virus Research" to the ever-increasing list of *Advances . . .* and *Annual Reviews . . .* be considered justified.

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