tion theory is presented in two chapters, and such things as character tables and reduction of direct products are worked out. A rather serious error is the failure to use Hermitian scalar multiplication in the formulae dealing with orthogonality of representation coefficients. Explanations of many points are correct and illuminating. Detailed worked-out examples are provided at every step to bring home the more abstract ideas.

The second section contains chapters on hybrid bonds, molecular orbital theory, ligand field theory, and molecular vibrations. The presentation of each subject includes enough physics to make the group theory meaningful. The examples are interesting, and they are taken from a wide variety of organic and organometallic molecules and inorganic anions and cations.

An appendix contains the character tables for the point-groups of interest to chemists. Only two double groups are included.

This book is certainly the most readable volume on the applications of point-group theory to chemistry. Many people will be grateful to the author for having taken the time to write it.

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Genetics Research

Methodology in Basic Genetics. Walter J. Burdette, Ed. Holden-Day, San Francisco, Calif., 1963. xii + 484 pp. Illus. $5.

One should not approach this volume with the hope that herein will be found a series of explicitly stated techniques for either "basic" genetic research or teaching at any level. A brief examination and the reasons become obvious. The contents consist of 18 papers and the discussions of the papers from an invitational symposium that included 60 participants, each an authority in his field. The papers are concerned with current genetic research utilizing such a diversity of organisms as bacteriophages, bacteria, fungi including yeasts, and *Drosophila.* As could be anticipated, no two participants approached their assignment in the same way. Some authors chose to emphasize review aspects, others focused on current problems, and still others on general methodology and its underlying rationale. The result is a bit of a hodge-podge.

The following authors prepared articles that are primarily reviews in the fields indicated: F. J. Ryan, mutation and population genetics studies in *Escherichia coli*; L. Lerman, kinetic studies on inactivation of pneumococcal transforming DNA; S. Emerson, tetrad analysis in fungi and problems of interference; H. Roman, gene conversion in fungi; G. Streisinger, bacteriophage-evoked proteins; J. L. Jinks, cytoplasmic inheritance in fungi (he stresses diagnostic criteria); and D. Nanney, cytoplasmic inheritance in protozoa.

The other authors chose to present papers that are concerned with general research approaches, and generalized methodology and its rationale in the indicated fields. E. Freese dealt with induced and spontaneous mutations in bacteriophages; R. S. Edgar with phage recombination; P. E. Hartman with transduction; W. Hayes, F. Jacob, and E. L. Wollman with conjugation in *E. coli;* R. H. Pritchard with the phenomenon of mitotic recombination and its demonstration (a good review); H. J. Muller and I. I. Oster with techniques for the detection of mutations in *Drosophila*; M. M. Green with pseudoalleles and recombination in *Drosophila* (he stresses the potential application of the analysis methods to other organisms); C. Yanofsky with the criteria for demonstrating gene-protein relationships in bacteria and fungi; E. Novitski with the construction of new chromosomal types in *Drosophila melanogaster* for studying chromosomal mechanics; D. L. Lindsley and L. Sandler with the construction of compound-X chromosomes in *D. melanogaster*; and D. F. Poulson with the demonstration and analysis of cytoplasmic inheritance in *Drosophila.*

The book is admirably suited for professionals in the fields of genetics and microbiology who desire updating in aspects outside of their own speciality and for graduate students working in areas other than those covered in the volume. The bibliography contains more than 1100 references and should go a long way toward providing a source for the detailed techniques which are omitted by the various authors. Genetic research and teaching today must be attacked with less devotion to a particular organism and more attention to problems in organisms in general; the choice of organism stems from the problem. This concept appears to have been an unstated objective of the genetics study section in organizing this symposium. We can hope that it will encourage more familiarity with more organisms by more geneticists.

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Qualitative Analysis

Identification of Organic Compounds. A student's text using semimicro techniques. Nicholas D. Cheronis and John B. Entrikin. Interscience (Wiley), New York, 1963. xii + 477 pp. Illus. $8.95.

Identification of Organic Compounds is primarily an abridgment of the authors' well-known *Semimicro Qualitative Organic Analysis.* By concentrating on the more useful and essential material the authors have achieved a more easily used textbook for students at the elementary and intermediate level. This has been done by shortening the previous text about 300 pages, rewriting part of the material, and adding new questions, problems, and recent references.

The methods used for the identification of an unknown organic compound follow the accepted paths: purification, the determination of physical constants, elemental analysis by sodium fusion, classification by means of an infrared spectrum, solubility and functional group tests, and finally, the preparation of solid derivatives.

The impact of modern instrumentation methods on the identification of organic compounds makes it unlikely that the present-day course in qualitative analysis will survive another decade. At present, in the more affluent schools, a student can prepare an infrared spectrum and, by using the "spec finder technique," search through Sadtler's catalog of 20,000 spectra and identify almost any commercially available organic compound in less than an hour, whether it be acetic acid or "krebiozen."

To go beyond the intermediate level, this textbook, like others in the field, now needs to include material on elements of gas-liquid chromatography and the interpretation of ultraviolet, nuclear magnetic resonance, and mass spectra.

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