

probably does not exist a single enzyme-catalysed reaction in which either substrate, product, enzyme, or some combination within this triad is not influenced in a very direct and highly specific manner by the precise nature of the inorganic ions which surround and 'modify' it" (page 856).

Carefully selected modern bibliographies constitute in total nearly 100 pages, almost one-sixth of the book. The book ends with a 45 page index of which 17 pages are devoted to subject matter.

The editors and the chapter authors deserve our thanks and our compliments. As the preface states, "Even now the subject area will no longer be encompassed by two volumes and two editors." The material included is well-selected. Volume I successfully consolidates "existing knowledge for the specialist" and is admirably suited to "serve as a reference text for . . . advanced students in biology, medicine and agriculture."

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An Index of Published Infra-Red Spectra. Volumes I and II. Edited by Mrs. M. B. B. THOMAS, with some assistance from Mr. E. R. ADAMS. British Information Services, 45 Rockefeller Plaza, New York 20, N. Y. 1960. x + 805 pp. 21 × 33.5 cm. Price, \$18.40 postpaid.

These two volumes are not sold separately. In the first are listed organic compounds of C₁-C₉; in the second, organic compounds of C₁₀ onward plus those of undetermined structure or ill-defined composition, along with inorganic compounds. Most of the infrared spectra published up to 1957 are to be found in these volumes, and data from 1957 and succeeding years will be included in a third volume which is now in active preparation. Those who would use any index of published spectra would like to know the limiting criteria for inclusion of data, the method of listing and the information provided. These facts are well set forth in the introduction to these volumes by Dr. L. J. Bellamy, who played a role in the initiation and encouragement of the project.

The requirements for the inclusion of a reference to an infrared spectrum are "that either a fairly extensive range should have been covered at normal rock-salt resolution, or a more limited range at higher resolution." Let it be clearly understood that the present work is an index for the location of spectra rather than a compilation of actual spectra. Moreover, no reference will be listed for a reported partial spectrum, where, for example, only one or two characteristic infrared bands are mentioned. These are often extremely useful to the organic or inorganic chemist but would admittedly be almost impossible to index. A different measure of usefulness is intended for the spectra which qualify for inclusion in these volumes.

The listing of compounds is by molecular formula, which provides a convenient method of searching for a given compound. By contrast, the complementary and possibly competing book, H. M. Hershenson's "Infrared Absorption Spectra, Index for 1945-1957," Academic Press, Inc., New York, N. Y., 1959, lists compounds by name, following the *Chemical Abstracts* system, and reference only. In "An Index of Published Infra-Red Spectra," after the molecular formula entry the compounds with the same formula are listed alphabetically. The references (given *fully*, which is a blessing since no special journal code need be consulted) to a single compound are listed chronologically. The state in which the sample was studied is indicated, the spectral range covered is expressed in either wave length or wave number, as in the original paper, and the optics are given. Thus, one can determine from a glance at the listings under state, range and optics whether the original reference to a compound contains the spectral information desired. These are time-saving volumes. They will prove most useful if brought up to date regularly by the issue of additional volumes. Dr. Bellamy states in his introduction that the intention will be made possible if libraries (especially) support the venture by purchase.

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Progress in Cryogenics. Volume 3. Edited by K. MENDELSSOHN, D. Phil. (Berlin), M. A. (Oxon), F. Inst. P., F.R.S. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1961. vii + 173 pp. 16 × 25 cm. Price, \$8.00.

This book is the third volume in a series intended to provide up-to-date information in the field of cryogenics. The chapters (each written by experts in their respective fields) are titled 1. Helium Liquefiers, 2. Low Temperature Heat Exchangers, 3. Novel Refrigeration Cycles and Devices, 4. Cryogenic Rocket Propellants, 5. Paramagnetic Substances for Nuclear Orientation, and 6. Dynamic Nuclear Orientation.

The first three chapters are concerned with the practical business of liquefaction methods and devices. Included are detailed and critical descriptions of commercial and laboratory-made liquefiers. The accompanying diagrams and photographs should prove useful. The third of these chapters discusses new refrigeration methods which "promise the possibility of achieving temperatures even as low as liquid helium with equipment which can be very small. . . . and as reliable as household Freon refrigerators."

The chapter on liquid rocket propellants is brief and discusses the problems of selection, handling and measurement.

Two chapters (nearly half of the volume) are devoted to nuclear orientation. The first considers the requirements and suitability of various paramagnetic substances for nuclear orientation. The second, dealing with dynamic nuclear orientation, discusses in some detail methods, techniques and apparatus. Applications and results are given in the final section.

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The Enzymes. Second Edition, Completely Revised. Volume 5. Hydrolytic Cleavage (Part B). Phosphate Ester Cleavage. Acid Anhydride Cleavage. Phosphorolytic Cleavage. C-C Synthesis and Cleavage. Isomerization. Hydration and Dehydration. Edited by PAUL D. BOYER, Department of Physiological Chemistry, University of Minnesota, Minneapolis, Minn.; HENRY LARDY, Institute for Enzyme Research, University of Wisconsin, Madison, Wis.; and KARL MYRBÄCK, Institute for Organic Chemistry and Biochemistry, University of Stockholm, Stockholm, Sweden. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1961. xix + 645 pp. 16 × 23.5 cm. Price, \$20.00.

The first edition of "The Enzymes," edited by Sumner and Myrbäck, rapidly gained acceptance as the standard reference for this field. The publication of a second edition approximately 10 years later is fully justified by the increased insight into the nature of enzymatic processes and properties as well as the large amount of descriptive information about individual enzymes published during this time. The field of biochemistry has been the recipient, or victim, of a logarithmically expanding number of reviews that omit few subjects. Nevertheless, it is a service to all to provide a comprehensive treatise that includes surveys of the entire field of enzymology by active workers in specialized areas. It is apparent that these investigators are concerned with problems of current interest, so that this edition must be viewed as a tool for the next several years, to be superseded by an even more expanded series when problems reach a more sophisticated level. It is to be hoped that eventually precise knowledge of enzyme structure and mechanism of action will permit brief statements of fact to replace the elaborate circumlocutions now required to construct images of enzymes from indirect evidence.

In Volume 5 of the present series, the editors have succeeded admirably in organizing a series of topics that are profitably surveyed in addition to being described in separate articles. The six general groupings of reactions included in this volume are the subjects of review articles of exceptional interest. The authors of these surveys have been allowed to explore many facets of their subjects, leaving the more complete descriptions of individual enzymes to the authors of more specialized articles.