that of a chemical control mechanism rather than an outright deletion, is proposed by Chance. From studies on ascites tumor cells, he sets up a computer representation of glucose and oxygen metabolism which suggests that the metabolic control mechanism may result from the law of mass action and a "compartmentation" of ATP and reduced diphosphopyridine nucleotide between the cytoplasmic and mitochondrial spaces.

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X-Ray Powder Photography in Inorganic Chemistry. Sponsored by the United Kingdom Atomic Energy Authority, Harwell. By R. W. M. D'EYE, M.Sc., Ph.D., A.R.I.C., and E. WAIT, M.A., D.Phil., Atomic Energy Research Establishment, Harwell. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1960. viii + 222 pp. 14.5 × 22.5 cm. Price, 8.50.

This book is one of many devoted to the techniques of X-ray powder photography. Its merits are that it is brief, accurate and quite readable. A large number of ideas are introduced, but the authors limit their discussions only insofar as they apply to routine powder analysis. A number of literature references are included, for the reader who feels that presentation a bit narrow. The book can be recommended as quite useful to the chemist without experience in crystallography who wishes a rapid introduction to the subject.

The most important material is presented in Chapters 3, 4 and 5, and accounts for about 40% of the book. The various cameras in use in powder photography are examined and many of the common experimental problems related to crystal mounting and sample alignment are discussed. A quite detailed account is given on the methods of indexing patterns of unknown material. Actual examples are worked out in detail for crystals of cubic, tetragonal and orthorhombic symmetries. A complete chapter is devoted to the measurement of accurate cell dimensions. The techniques discussed pertain to photographic methods exclusively, no mention being made of counter methods of collecting data.

Two chapters on theory follow those on experimental procedures. The first introduces crystal symmetry and describes the effects of various translational symmetries on the diffraction pattern. The second discusses the intensities of X-ray reflections as a function of atomic parameters. The book is rounded out by an introductory chapter on the generation of X-rays and a final chapter on the application of X-ray diffraction to chemical analysis and to problems of thermal analysis such as the determination of expansion coefficients, transition temperatures and phase diagrams.

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Crystal Structures. Supplement V. By RALPH W. G. WYCKOFF, University of Arizona, Tucson, Arizona; formerly Laboratory of Physical Biology, National Institute of Arthritis and Metabolic Diseases, Bethesda, Maryland. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1960. 676 pp. 19.5 x 24.5 cm. Price, $26.50.

In 1948, the first section of a compilation of crystal structures by R. W. G. Wyckoff was published. To make it possible to keep information up to date, the material has been issued in loose leaf form. The entire work now consists of fifteen chapters, published in four sections and four previous supplements; five binders, labeled Volumes I–V, are needed to hold the material. The first twelve chapters pertain to inorganic substances and constitute Volumes I–III. Chapter XIII, Aliphatic Compounds, makes up Volume IV and Chapters XIV (Derivatives of Benzene) and XV (Alicyclic and Heterocyclic Compounds) Volume V. The present review concerns the fifth supplement which now completes the work.

This final supplement contains material to be integrated into all volumes. It consists largely of bibliographic sections covering the years 1914–1934, based on Wyckoff's "The Structure of Crystals" (2nd Ed., Reinhold, Publ. Corp., New York, N.Y., 1931) and its supplement (Reinhold Publ. Corp., New York, N. Y., 1934), both of which are now out-of-print. While only bibliographic material is included for Chapters II, III, IV, V, VI, VII, VIII, XIV and XV, new structure illustrations (approximate number indicated in parentheses) are also included for Chapters IX, Inorganic Compounds, $R_x(MXm)_y$, (25); X, Hydrates and Ammoniates (49); XI, Misc. Inorg. Compounds (46), XII; Silicates (42); and XIII, Aliphatics (49). A number of these refer to work completed in the 1950's.

Most welcome is the inclusion of a complete index for the five volumes. The Inorganic formula index constitutes about 56 pages with *ca.* 4000 formulas listed; a mineralogical name index also is provided. These are intended to be placed at the end of Volume III. The organic index comprises about 40 pages and lists the names of *ca.* 2000 compounds.

The 5th supplement provides a check list of pages which should be in all volumes after the various sections and supplements have been integrated properly. The pagination has become somewhat complex in places but follows a logical order which is carefully described.

All interested in the structure of crystals will benefit immensely from this compendium and I am certain would wish to join this reviewer in an expression of thanks to Dr. Wyckoff for his contribution.

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Kolloidchemie. By JOACHIM STAUFF, Dr. Phil., Apl. Professor für Physikalische Chemie an der Universität Frankfurt a.M. Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, Germany. 1960. viii + 744 pp. 16.5 × 23.5 cm. Price, DM. 69.—.

The book is divided into ten large chapters. It begins with a General Introduction (42 pp.) containing some highlights of the history of colloid chemistry, definitions of major terms and classification. The two following chapters represent the center of gravity of the work (pp. 43–289) treating the physical properties of colloids: diffusion, sedimentation, osmotic pressure, viscosity, optical properties, etc. In the fourth chapter (80 pp.) are treated the surface phenomena, the fifth chapter (47 pp.) is concerned with the electrical properties of colloids, whereas in the sixth chapter the author attempts to apply statistical thermodynamics to some disperse systems. The last four chapters treat the dispersion colloids (lyophobic dispersions, emulsions, aerosols, foams), the association colloids (soaps, detergents), the macromolecules (proteins, nucleic acids, etc.), and the gels. Moreover, an appendix contains explanatory treatments of some fundamentals in thermodynamics and optics.

The "Colloid Chemistry" of Stauff is an advanced treatment with a strong emphasis on theory. This is illustrated by the fact that in chapter 2 one finds a section on statistics and two sections on statistical thermodynamics of mixtures. As a consequence, the factual side of the presentation is somewhat sketchy. For example, one finds little on the methods of preparation of dispersion colloids, whereas the theory of flocculation is treated more extensively. Emulsions and foams are described on 20 pages, and aerosols on only 6 pages. Soaps and other detergents are treated more thoroughly (53 pp.), and quite attractively. Although the choice of examples of the factual material in general is satisfactory, some important items of practical value have been omitted, *e.g.*, the author has not mentioned the Northrop–Anson method for diffusion measurement and the precipitation titration (Fällungstitration) of G. V. Schulz. Also the Flory–Scheraga–Mandelkern equations correlating molecular weight with sedimentation constant and viscosity should be given more attention in this size book. Most regrettable, however, is the cursory indexing. The book has no authors' index, and the subject index is inadequate. For example, one finds in the index such items as amino acids, horse methemoglobin, Volta potential, but fails to find gold sols, silver sols, sulfur colloids, albumin, nitrocellulose and molecular weight. It may be doubted if one would ever look in the index for such items as "Kombinatorik" or "Polyform," but it is likely that one interested in colloids will be looking for ferric hydroxide colloids or glob-