
BOOK REVIEWS

The Structure of Glass. Proceedings of a Conference on the Structure of Glass, Leningrad, November 23-27, 1953. Translated by E. B. UVAROV. FRANCES COLEMAN, Editor-in-Chief, HOWARD STEENSEN, Executive Editor, and MARVIN SILVERBERG, Technical Editor. Consultants Bureau, Inc., 227 West 17th Street, New York 11, N. Y. 1958. 291 pp. 21.5 × 28 cm. Price, \$20.00.

The foreword indicates that the translation was sponsored jointly by the Glass Division of the American Ceramic Society and the National Science Foundation. "Factual portions comprise a definite contribution to the knowledge commonly available to Western scientists, and the controversial portions will add zest to those concerned with the yet unsolved riddle of the structure of glass." Scientific and industrial workers from 28 towns in the Soviet Union (more than 500 delegates) met in Leningrad at the invitation of the Institute of Silicate Chemistry of the Academy of Sciences, USSR, the S. I. Vavilov State Optical Institute and the Leningrad Section of the All-Union Engineering-Technical Society of the Silicate Industry, November 23 to 27, 1953, to consider the theory of glass structure. "Many papers and communications on recent experimental investigations of the properties of different glasses and on existing theories of glass structure were presented and discussed in detail."

In his Introductory Address academician A. A. Lebedev refers to well known changes observed during toughening or tempering and assumes changes of glass structure without altering the composition. Effect of heat treatment of optical glass on properties of optical glass is mentioned. He points to the significance of spectroscopic methods in investigating the nature of bonds between individual atoms, and believes that the electron microscope "effects favorable prospects." Feels that if we could control silicate chain length and growth we might make "less brittle glasses" and "come nearer to . . . making unbreakable silicate glass."

Paper I is on "The Crystalline Theory of Glass Structure" by K. S. Eystropyev. II, "The Structure and Properties of Organic Glasses" by P. P. Kobeko. III, "The Structure of Glass" by O. K. Botvinkin. IV, Considers possibilities and results of X-ray methods and interpretation of patterns; author, E. A. Porai-Koshits. Is lengthy, generously illustrated with graphs and a bibliography of 38 references. V, "Structural Peculiarities of Vitreous and Liquid Silicates" by E. O. Esin and P. V. Geld; 84 references. VI, "Raman Spectra and the Structure of Glassy Substances" by E. F. Gross and V. A. Kolesova. VII, "The Quantum Theory of Heat Capacity and the Structure of Silicate Glasses" by V. V. Tarasov. VIII, "The Infrared Spectra of Simple Glasses and their Relationship to Glass Structure" by V. A. Florinskaya and R. S. Pechenkina. This chapter provides an abundance of significant curves. IX, "The Coördination Principle of Ion Distribution in Silicate Glasses" by A. A. Appen. X, "Concepts of the Internal Structure of Silicate Glasses which Follow from the Results of Studies of the Properties of Glasses in Certain Simple Systems," by L. I. Demkina. XI, "The Theoretical Views of D. I. Mendeleev on the Structure of Silicates and Glasses, and their Significance for Modern Sciences," by L. G. Melnichenko. XII, "The Views of D. I. Mendeleev on the Chemical Nature of Silicates" by V. P. Barzakovsky.

The reviewer has listed titles and authors of the first twelve papers (which are not numbered). The ensuing twenty papers deal with Sodium Borosilicate Glasses; Structure Based on Porous Glass and Films; State of Silica in Microporous Glass; Destructability of Vitreous Sodium and Aluminum Silicates by Aqueous Solutions; Definite Chemical Compounds in the Structure; Chemical Resistance; Refractive Index Changes below 300°C., Rayleigh Scattering; Light Scattering in Borosilicate Glasses; Luminescence Method of Study; Oriented Structures; Use of Electron Microscope; Electron Diffraction in Industrial Glasses; High-Alumina Properties; Compounds in Borate Glasses; Volatilization of Components; Visual Polythermal Studies; Solubility in Binary Silicates; Temperature-Viscosity Re-

lationships and Structure; Viscosity Above and Below Liquidus Temperature; Dielectric Loss in Silicate Glasses; Electric Conductivity in Simple Borate Glasses; Electrical Conductivity in Strong Electric Fields and Wetting of Metals by Glass; Electrical Conductivity of Quartz Glass; Structure and Properties of Enamels; Oxygen Potential of Glass; Glassy State of Organic Polymers; Methodological Basis of Structure.

Next follow eight discussions of about one page each on the general nature of glassy substances; then seven on physical chemistry; ten comments, corrections, etc., on optical properties and structure; two on crystal chemistry and structure; three on further development.

In his concluding address A. A. Lebedev comments in part, "The main problem with which we were concerned was the structure of glass. It seems that all agree that there is some degree of order in the arrangement of atoms in glass, but opinions differ on the nature and degree of this order." He elaborates on the reasons.

The volume closes with a table of contents giving pages in the English translation and in the Russian volume. There is no subject or author index. Considering the American subsidization of the translation, the price of the bound volume, \$20.00, seems high.

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Cholesterol. Chemistry, Biochemistry, and Pathology.

Edited by ROBERT P. COOK, University of St. Andrews, Queen's College, Dundee, Scotland. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. xii + 542 pp. 16 × 23.5 cm. Price \$15.00.

Considering the key position which cholesterol occupies in metabolism, many disciplines are involved in its study and each of them is technical in its own way. To ensure the widest possible coverage of this timely subject, the editor has enlisted the help of a number of experts, each well known for research achievements in his own field. Because of the overlapping of some of the aspects of this subject, there was danger of repetition and lack of integration. No such shortcomings apply to this treatise. Although each chapter represents a unit in itself, many helpful cross references to other chapters are given. The editor is to be congratulated on the excellence of the team work. The book may be regarded as reasonably "up to date" to the end of 1957.

The contributors and their chapters are as follows: I. Historical Introduction. By Hendrik Dam. Pp. 1-14. II. Chemistry. By Peter Bladon. Pp. 15-115. III. Methods of Isolation and Estimation of Sterols. By Robert P. Cook and James B. M. Rattray. Pp. 117-143. IV. Distribution of Sterols in Organisms and in Tissues. By Robert P. Cook. Pp. 145-180. V. The Physiology of the Circulating Cholesterol and Lipoproteins. By George G. Boyd and Michael F. Oliver. Pp. 181-208. VI. Biosynthesis of Cholesterol. By R. Gordon Gould. Pp. 209-235. VII. The Metabolism of Cholesterol and Other Sterols in the Animal Organism. By R. Gordon Gould and Robert P. Cook. Pp. 237-307. VIII. Conversion of Cholesterol to Steroid Hormones. By Oscar Hechter. Pp. 309-347. IX. Microscopical Localization of Cholesterol in Cells and Tissues. By Geoffrey H. Bourne. Pp. 349-374. X. Pathological Manifestations of Abnormal Cholesterol Metabolism. By David Adlersberg and Harry Sobotka. Pp. 375-425. XI. Treatment of Disorders of Cholesterol Metabolism. By Irvine H. Page. Pp. 427-433. XII. Evolutionary Aspects of the Sterols. By Werner Bergmann. Pp. 435-444. XIII. The Sterol Requirements of Insects and of Protozoa. By Marjorie G. Horning. Pp. 445-455. XIV. The Microbial Metabolism of Steroids. By Thressa C. Stadtman. Pp. 457-463. XV. Some Relations of Cholesterol to Other Lipids. By Robert P. Cook. Pp. 465-479.

Considering the scope of this book, the reviewer does not feel qualified to pass critical judgment on all of the varied