NEW BOOKS

edited by F. W. Quackenbush

GROWTH REGULATING SUBSTANCES FOR ANIMAL CELLS IN CULTURE, A Symposium, Wistar Institute of Anatomy and Biology, March 1967, V. Defendi and M. Stoker, editor (The Wistar Institute Press, Philadelphia, 125 p., 1967, $5.00).

This book presents the eight papers given at the Wistar Institute Symposium in March 1967 with an introduction by Michael Stoker and summary by Harry Eagle. The study of control mechanisms which affect all growth in culture is a relatively new field. Although the relevance of such in vitro control mechanisms to those of the whole animal is problematic, such studies are of interest as model systems in which to develop approaches to the complicated control mechanisms of higher organisms. Possible changes in regulatory mechanisms reflected in the marked difference between the growth of normal cells and that of tumor and transformed cells were of special interest to the participants at this symposium.

In a new field a symposium held in 1967 may already be somewhat out of date. The contents of this book are more limited in scope than the title suggests. The first three papers deal with the so-called liver inhibitor which has been identified as arginase. A series of papers describing the phenomenon of contact inhibition produces a sizable amount of semantic confusion. However, the question of whether there are several causes of inhibition of cell division in crowded cultures was not clarified. Indeed, as stated in the summary, very few problems are resolved in the course of this symposium. Some of these studies represent the important beginning of an understanding of growth control mechanisms at the molecular level.

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REVIEWS IN MACROMOLECULAR CHEMISTRY, Vol. 1, edited by George B. Butler and Kenneth F. O'Driscoll (Marcel Dekker, Inc., New York, 449 pp., 1967, $16.50).

This is the first volume of a series of seven reviews in Macromolecular Chemistry published in 1966 in the Journal of Macromolecular Chemistry (subsequently Journal of Macromolecular Science). The objective in first publishing the reviews in journal form was to place them in the hands of scientists as quickly as possible.

This volume encompasses seven topics of the recent technical and patent literature. The first review, Application of Molecular Orbital Theory to Vinyl Polymerization, treats the subject from the standpoint of free-radical and ionic polymerization and deals primarily with the molecular orbital calculation of monomer reactivity in propagation reactions. The longest review in this work is on poly(alkylene oxides) which encompasses 352 references and covers work reported during 1963 and 1964. This topic is discussed from the standpoint of polymerization mechanisms, catalysts, copolymerization, polymer properties and applications.

Another topic is Polyurethanes, which is not treated as a comprehensive review of all urethane chemistry, but deals primarily with the synthesis of well-characterized linear polyurethanes, with a very brief discussion of the structure and properties of polyurethanes. The literature covered in this review dates from 1882. Uncatalyzed, Uninhibited Thermal Oxidation of Saturated Polyolefins are examined from the standpoint of various factors affecting the oxidation of these polymers such as polymer morphology, polymer chain structure, sample thickness, sample impurities, temperature and oxygen concentration. The discussion then turns to the oxidation of specific saturated polyolefins, e.g., polyethylene, polypropylene and poly (butene-1) by various techniques.

Double-Strand Polymers is the shortest review in this volume although it includes 169 references. It deals with efforts of polymer chemists to synthesize thermally stable organic polymers for a great variety of industrial applications, and includes a discussion of ribbon and ladder type polymers but excludes those called parquet polymers containing metal atoms as complexing agents.

Biomedical Polymers are reviewed as a class of synthetic polymers to be used in intimate contact with living tissues such as sutures, surgical adhesives, plasma extenders and as artificial parts in the body. The relatively new and rapidly growing use of synthetic polymers is discussed from the standpoint of polymer synthesis, fabrication and sterilization, the mechanical properties of the polymers, the effect of the physiological environment on polymers, the effect of the polymers on biological systems, and finally, polymer membrane uses in artificial lungs and kidneys.

The last review deals with polymer fractionation by Gel Permeation Chromatography with Organic Solvents, giving details of this new technique and ending with a tabulation of 16 specific polymers studied by the polymer separation method.

This new series of reviews joins several others recently introduced. However, so far, there has been no overlap in subjects reviewed and with the rapidly growing polymer literature there is ample room for all of them without duplication of effort.

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