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Symposium on Biomedical Polymers

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INTRODUCTION

In recent years there has been an upsurge of interest in the biomedical application of high polymers. The interest is generated largely by the developments in artificial organs and prosthetic devices, so essential to our well-being. This includes problems related to artificial hearts, kidneys, arteries, bones, dentures, heart-lung machines, synthetic blood substitutes, and surgical adhesives. As a consequence of the very wide scope of this problem, an interdisciplinary approach is clearly needed. Up until the fairly recent past, however, the importance of biomedical research of polymers has enjoyed less attention from polymer chemists than it properly deserves. The Symposium on Biomedical Polymers was organized as part of an effort to bring together members of the medical and chemical professions to discuss the state-of-the-art of this field.

This Symposium, held at the California Institute of Technology on July 7 and 8, 1969, was sponsored by the Polymer Group of the Southern California Section of the American Chemical Society. It is part of a series of annual polymer symposia offered by the Polymer Group. The program was organized by a Committee co-chaired by the undersigned and whose members were Prof. W. H. Corcoran of the California Institute of Technology, Dr. H. Lee of the Epoxylite Corporation, Prof. D. J. Lyman of the University of Utah, Prof. E. G. Partridge of the University of Southern California, and Prof. N. W. Tschoegl of the California Institute of Technology. We are indebted to the members of this Committee for making it possible to present such a fine program. Special thanks are due to Prof. Tschoegl whose service as Arrangements Chairman resulted in a well-organized meeting.

The papers presented at the Symposium and collected in this volume may be conveniently grouped into four parts:

I. General information concerning the nature of blood tissue reactions and the essential problems involved in the applications of the artificial kidney.

II. Properties and biocompatibility of existing, most promising commercial polymers and membranes.

III. Potential nonthrombogenic and other biomedical polymers.

IV. Future developments.

In view of the scope and complexity of the problem of blood compatibility with materials foreign to the human body, the above topics are necessarily incomplete. Nevertheless, it is hoped that the summary of existing knowledge and the new information presented at this meeting will be of considerable help to those interested in this field.

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