

CONTENTS

Part IV

Chapter XIII. INVESTIGATIONS OF THE STRUCTURE OF CELLULOSE AND ITS DERIVATIVES

- A. Infrared Spectroscopy (*Blackwell, Marchessault, and O'Connor*)
- B. Deuteration and Tritiation (*Mann*)
- C. X-Ray and Electron Diffraction (*Jones, Ellefsen, and Tønnesen*)
- D. Nuclear Magnetic Resonance Spectroscopy (*Barker and Pittman*)
- E. Microscopical Investigations (*Morehead*)
- F. Submicroscopical Investigations (*Tønnesen and Ellefsen*)
- G. Measurement of Crystallinity (*Tripp*)
- H. Swelling (*Warwicker*)

Chapter XIV. INVESTIGATIONS OF SOLUTIONS

- A. New Solvents (*Jayme*)
- B. Light Scattering (*Sundelöf*)
- C. Osmometry (*Vink*)
- D. Viscometry (*Vink*)
- E. Fractionation (*Glegg, Tanghe, and Brewer*)
- F. Concentrated Solutions (*Moore*)
- G. Conformation and Dimensions of the Molecule in Solution (*Brown*)

Chapter XV. MECHANICAL PROPERTIES OF CELLULOSE

- A. Mechanical Behavior of Fibers (*Grant*)
- B. Deformation of Fiber Structures in Paper (*Van den Akker and Sternstein*)

Chapter XVI. BIOSYNTHESIS OF CELLULOSE

- A. Biosynthesis of Cellulose and Related Plant Cell-Wall Polysaccharides (*Hassid*)
- B. Structure and Formation of the Cellulose Microfibril (*Colvin*)

Part V

Chapter XVII. DERIVATIVES OF CELLULOSE	719
A. Effect of Morphology on Reactivity (<i>Segal</i>)	719
B. Esters (<i>Hiatt and Rebel</i>)	741
C. Ethers (<i>Savage</i>)	785
D. Ethers from α, β -Unsaturated Compounds (<i>Bikales</i>)	811
E. Crosslinked Cellulose (<i>Tesoro and Willard</i>)	835
F. Derivatives with Unusual Functional Groups (<i>Gal'braikh and Rogovin</i>)	877
G. Graft Copolymers (<i>Stannett and Hopfenberg</i>)	907
H. Reactions Induced by High-Energy Radiation (<i>Arthur</i>)	937
I. Electron Spin Resonance Studies (<i>Arthur</i>)	977
Chapter XVIII. DEGRADATION OF CELLULOSE AND ITS DERIVATIVES	991
A. Acid Hydrolysis and Alcoholyisis (<i>Sharples</i>)	991
B. Alkaline Degradation (<i>Richards</i>)	1007
C. Thermal Degradation (<i>Kilzer</i>)	1015
D. Photochemical Degradation (<i>Baugh and Phillips</i>)	1047
E. Enzymatic Degradation (<i>Reese and Mandels</i>)	1079
Chapter XIX. NEW DEVELOPMENTS IN THE TECHNOLOGY OF CELLULOSE AND ITS DERIVATIVES	1095
A. Durable-Press Treatments (<i>Goldstein</i>)	1095
B. High-Wet-Modulus and Other High-Tenacity Rayons (<i>Schappel and Bockno</i>)	1115
C. Cellulose Triacetate Fibers (<i>Smart and Zellner</i>)	1151

D.	Paper from Chemically Modified Cellulose (<i>Ward and Bernardin</i>)	1169
E.	Films (<i>Daul and Mitchell</i>)	1225
F.	Membranes	1233
	F 1. Flat Membranes (<i>Kesting</i>)	1233
	F 2. Hollow-Fiber Membranes (<i>Mahon and Lipps</i>)	1261
G.	Microcrystalline Cellulose (<i>Battista</i>)	1265
H.	Ion-Exchange Celluloses (<i>Guthrie</i>)	1277
I.	Flame-Resistant Textiles (<i>Drake and Reeves</i>)	1293
J.	Biologically Active Cellulosic Materials (<i>Rogovin and Virnik</i>)	1333
K.	Dimensional Stabilization (<i>Tarkow</i>)	1337
L.	Pulping Processes (<i>Thompson</i>)	1349
SUBJECT INDEX, Parts IV and V		1389