

## CONTENT

	Page
<b>Part One</b>	
<b>Studies on Polymerization and Ring Formation</b>	<b>1</b>
Introduction by H. Mark	3
I. An Introduction to the General Theory of Condensation Polymers	4
II. Polyesters	17
III. Glycol Esters of Carbonic Acid	29
IV. Ethylene Succinates	42
V. Glycol Esters of Oxalic Acid	54
VI. Adipic Anhydride	63
VII. Normal Paraffin Hydrocarbons of High Molecular Weight Prepared by the Action of Sodium on Decamethylene Bromide	68
VIII. Amides from <i>ε</i> -Aminocaproic Acid	78
IX. Polymerization	81
X. The Reversible Polymerization of Six-Membered Cyclic Esters	141
XI. The Use of Molecular Evaporation as a means for Propagating Chemical Reactions	154
XII. Linear Superpolyesters	156
XIII. Polyamides and Mixed Polyester-Polyamides	165
XIV. A Linear Superpolyanhydride and a Cyclic Dimeric Anhydride from Sebacic Acid	168
XV. Artificial Fibers from Synthetic Linear Condensation Superpolymers	179
XVI. A Polyalcohol from Decamethylene Dimagnesium Bromide	190
XVII. Friedel-Crafts Syntheses with the Polyanhydrides of the Dibasic Acids	192
XVIII. Polyesters from <i>w</i> -Hydroxydecanoic Acid	195
XIX. Many-Membered Cyclic Anhydrides (1)	202
XX. Many-Membered Cyclic Esters	212
XXI. Physical Properties of Macrocyclic Esters and Anhydrides New Types of Synthetic Musks	221
XXII. Stereochemistry and Mechanism in the Formation and Stability of Large Rings	225
XXIII. <i>ε</i> -Caprolactone and Its Polymers	235
XXIV. Cyclic and Polymeric Formals	240
XXV. Macrocyclic Esters	248
XXVI. Meta and Para Rings	259
XXVII. Polydecamethylene Oxide	263
XXVIII. Preparation of Macrocyclic Lactones by Depolymerization	265
<b>Part Two</b>	
<b>Acetylene Polymers and Their Derivatives</b>	<b>271</b>
I. Introduction by G. Stafford Whitby	273
II. A New Synthetic Rubber: Chloroprene and Its Polymers	281
III. The Addition of Hydrogen Chloride to Vinylacetylene	306
IV. The Addition of Hydrogen Bromide to Vinylacetylene, Bromoprene and Dibromobutene	311
V. The Polymerization of Bromoprene (Third Paper on New Synthetic Rubbers)	314
VI. Vinylethynylmagnesium Bromide and Some of Its Reactions	321
VII. Sodium Vinylacetylide and Vinylethynylcarbinols	323
VIII. $\alpha$ -Alkyl- $\beta$ Vinylacetylenes	329
IX. 1-Allyl-2-chloro-1,3-butadienes and their Polymers (Fourth Paper on New Synthetic Rubbers)	331
X. The Chlorination of the Hydrochlorides of Vinylacetylene	335
XI. Dichloro-2,3-butadiene-1,3 and Trichloro-1,2,3-butadiene-1,3	340
XII. The Addition of Thio- <i>p</i> -cresol to Divinylacetylene	344
XIII. The Action of Chlorine on Divinylacetylene	348
XIV. The Dihydrochloride of Divinylacetylene	357
XV. Halogen-4-butadienes-1,2 The Mechanism of 1,4-Addition and of $\alpha,\gamma$ -Rearrangement	361
XVI. The Preparation of Orthoprenes by the Action of Grignard Reagents on Chloro-4-Butadiene-1,2	368
XVII. Mercury Derivatives of Vinylacetylene	372
XVIII. 1-Halogen-2-vinylacetylenes	375

XIX. The Structure of Divynylacetylene Polymers	378
XX. The Addition of Alcohols to Vinylacetylene, etc.	381
XXI. Homologs of Chloroprene and Their Polymers (Second Paper on New Synthetic Rubbers)	384
XXII. The Synthetic Rubber Problem	391

### **Part Three**

#### **Miscellaneous Papers** **399**

I. Association Polymerization and the Properties of Adipic Anhydride	401
II. Ueber die angeblichen Isomerien bei cyclischen Oxalsaeure-estern	402
III. $\epsilon$ -Caprolactone	407
IV. Polymers and Polyfunctionality	409

#### **Bibliography and Patents** **423**

**Authors Index** **433**

**Subject Index** **439**