

## CONTENTS

Chapter XII. Hydroxy-and Amino-monocarboxylic Acids and Related Compounds	
1. Hydroxy-acids, $C_nH_{2n}(OH)CO_2H$	779
2. Sulphur and Selenium Derivatives of Hydroxy-acids	806
3. Nitro- and Amino-monocarboxylic Acids and Related Compounds	810
4. Unsaturated Hydroxymonocarboxylic Acids	842
Chapter XIII. Aldehydo-and Keto-acids	
1. Aldehydo-carboxylic Acids	850
2. Keto-carboxylic Acids	859
Chapter XIV. Carbonic Acid and its Derivatives	
1. Carbonic Acid and its Esters	886
2. Chlorides of Carbonic Acid	891
3. Sulphur Derivatives of Carbonic Acid	893
4. Amides of Carbonic Acid	899
5. guanidine and its Derivatives	929
6. Nitriles and Imides of Carbonic and Thiocarbonic Acids	937
Chapter XV. Dicarboxylic Acids	
1. Paraffindicarboxylic Acids, $C_nH_{2n}(CO_2H)_2$	950
2. Olefinedicarboxylic Acids, $C_nH_{2n-4}O_4$	987
3. Diolefinedicarboxylic Acids	1007
4. Polyolefinedicarboxylic Acids	1009
5. Acetylene-and Polyacetyene-dicarboxylic Acids	1010
Chapter XVI. Trihydric Alcohols and Their Oxidation Products: Trihydric Alcohols to Triketones	
1. Trihydric Alcohols and their Derivatives	1012
2. Dihydroxy-aldehydes	1036
3. Dihydroxy-ketones	1039
4. Hydroxy-dialdehydes	1041
5. Hydroxyaldehyde-Ketones	1043
6. Hydroxy-diketones	1043
7. Dialdehyde-ketones	1044
8. Aldehyde-diketones	1045
9. Triketones	1045
Chapter XVII. Trihydric Alcohols and Their Oxidation Products (continued): Dihydroxycarboxylic Acids	
1. Dihydroxy-acids and Related Compounds	1048
2. hydroxyaldehydocarboxylic Acids and Hydroxyketocarboxylic Acids	1083

3. Dialdehydicarboxylic Acids	1090
4. Aldehydokerocarboxylic Acids	1091
5. Diketocarboxylic Acids	1093
6. Hydroxydicarboxylic Acids	1098
7. Aldehydicarboxylic Acids	1124
8. Ketodicarboxylic Acids	1126
9. Tricarboxylic Acids	1146
Chapter XVIII. Tetrahydric Alcohols and Their Oxidation Products	
I. Tetrahydric Alcohols	1155
2. Trihydroxyaldehydes	1160
3. Trihydroxyketones	1162
4. Dihydroxydialdehydes	1162
5. Dihydroxydiketones	1162
6. Dihydroxyketoalboxylic Acids	1162
7. Hydroxytriketones	1162
8. Tetraketones	1162
9. Trihydroxycarboxylic Acids	1163
10. Dihydroxyaldehydicarboxylic Acids	1165
11. Dihydroxyketocarboxylic Acids	1165
12. Hydroxydidetocarboxylic Acids	1166
13. Triketocarboxylic Acids	1166
14. Dihydroxydicarboxylic Acids	1166
15. Hydroxyketodicarboxylic Acids	1179
16. Diketodicarboxylic Acids	1186
17. Hydroxytricarboxylic Acids	1186
18. Ketotricarboxylic Acids	1191
19. Tetracarboxylic Acids	1192
Chapter XIX. Pentahydric Alcohols and Their Oxidation Products	
I. Pentahydric Alcohols	1197
2. Tetrahydroxaldehydes or Alopentoses	1199
3. Tetrahydroxyketones or ketopentoses, C <sub>5</sub> H <sub>10</sub> O <sub>5</sub>	1212
4. Deoxypentose Sugars, C <sub>5</sub> H <sub>10</sub> O <sub>4</sub>	1214
5. Glycols, C <sub>5</sub> H <sub>8</sub> O <sub>3</sub>	1214
6. Trihydroxydialdehydes and Trihydroxyetoaldehydes	1216
7. Tetrahydroxymonocarboxylic Acids	1218
8. Trihydroxyaldihydrocarboxylic Acids	1220
9. Trihydroxydicarboxylic Acids	1221
10. Dihydroxyketodicarboxylic Acids	1221
11. Triketodicarboxylic Acids	1222
12. Dihydroxytricarboxylic Acids	1223

13. Penta-and Higher Carboxylic Acids	1223
14. Olefinepolycarboxylic Acids	1223
Chapter XX. Hexa-and Poly-hydric Alcohols and Their Oxidation Products Carbohydrates and Related Compounds	
I. Polyhydric Alcohols	1224
2. Penta-, Hexa-, Hepta- and Octa-hydrkoxy-aldehydes and –ketones.	1230
3. Tetrahydrozyketoaldehydes	1266
4. Hexaketones	1267
5. Polyhydroxymonocarboxylic Acids (Aldonic Acids)	1267
6. Dehydrocexonic Acids, C <sub>6</sub> H <sub>8</sub> O <sub>6</sub> , and Their Analogues, Ascorbic Acids	1273
7. Tetrahydroxyaldehydocarboxylic Acide and Tetrahydroxyketocarboxylic Acids	1277
8. Polyhydroxydicarboxylic Acids	1281
9. Tetraketodicarboxylic Acids	1284
10. Triketotricarboxylic Acids	1285
11. Hydroxyketotetracarboxylic Acids	1285
12. Diketotetracarboxylic Acids	1286
13. Hexacarboxylic Acids	1286
Chapter XXI, Complex Carbohydrates: Oligosaccharides and Polysaccharides	
I. Oligosaccharides	1287
2. Polysaccharides	1305
Chapter XXII. Proteins	
Introduction	1327
I. The Amino-Acid Constituents of Proteins	1327
2. General Properties of Proteins	1329
3. Classification of Proteins	1331
4. Amino-Acid Composition of Proteins	1333
5. Physico-chemical Properties of Proteins	1339
6. The Essentials of Protein Structure	1348
7. Addendum	1357
Chapter XXIII. Enzymes	
Introduction	1358
I. Nomenclature and Classification	1360
2. Nature and Properties of Enzymes	1365
3. Preparation and Purification of Enzymes	1374
4. Properties of Some Individual Enzymes	1375
5. Miscellaneous	1388
INDEX	1393