

CONTENTS

VOLUME III

METHODS OF ORGANIC ANALYSIS—SOME GENERAL REMARKS	xi
Chapter 29. QUANTITATIVE ULTIMATE ORGANIC ANALYSIS	1
INTRODUCTION	1
THE DETERMINATION OF NITROGEN BY THE KJELDAHL METHOD <i>Procedure 1 (2). Procedure 2, Kjeldahl-Gunning-Jodlbauer method (4)</i>	1
THE DETERMINATION OF HALOGENS <i>General remarks</i>	5
THE DETERMINATION OF HALOGENS BY THE BOMB METHOD	6
THE DETERMINATION OF SULPHUR <i>General remarks</i>	15
THE DETERMINATION OF SULPHUR BY THE GROTE-KREKELER METHOD	16
REFERENCES	19
Chapter 30. QUANTITATIVE ORGANIC MICROANALYSIS	20
GENERAL INTRODUCTION	20
SAMPLING	20
THE MICROCHEMICAL BALANCE	21
DRYING AND PREPARATION FOR WEIGHING <i>Drying (26). Preparation and weighing (27). The transfer of apparatus to and from the micro balance (31)</i>	26
CARBON AND HYDROGEN <i>Remarks (32). Apparatus (32). Reagents (36). Procedure (38). Analysis of hygroscopic solids (46). Analysis of very volatile liquids (45). Analysis of substances containing a high percentage of nitrogen (47). Analysis of substances containing phosphorus or arsenic (48). Analysis of substances containing alkali or alkaline earth metals (48). Analysis of substances containing fluorine (48). Use of manganese dioxide to retain oxides of nitrogen (48). Compounds containing silicon (49)</i>	32
NITROGEN: MODIFIED DUMAS METHODS <i>Remarks (49). Method 1. Apparatus (50). Reagents (56). Procedure (57). Method 2. Apparatus (62). Reagents (65). Procedure (65).</i>	49
NITROGEN: KJELDAHL METHOD	69
OXYGEN: IODOMETRIC METHOD	75
A*—III	

OXYGEN : GRAVIMETRIC METHOD	83
OXYGEN: CONDUCTOMETRIC METHOD	86
OXYGEN: COMPOUNDS CONTAINING FLUORINE	96
HALOGENS : MICRO GROTE COMBUSTION METHOD	102
HALOGENS : POTASSIUM FUSION METHOD	114
HALOGENS : MICRO CARIUS METHOD FOR CHLORINE AND BROMINE	117
HALOGENS OTHER THAN FLUORINE: SILVER ABSORPTION METHOD	120
HALOGENS : BROMINE	126
HALOGENS : IODINE	128
HALOGENS : FLUORINE	129
SULPHUR : MICRO GROTE COMBUSTION METHOD	132
SULPHUR: SODIUM PEROXIDE BOMB FUSION METHOD	141
SULPHUR : MICRO CARIUS METHOD	144
SULPHUR: POTASSIUM FUSION METHOD	145
PHOSPHORUS : GRAVIMETRIC AND VOLUMETRIC METHODS	147
ARSENIC	155
MERCURY	158
THE VOLUMETRIC DETERMINATION OF ALKOXYL GROUPS	163
HYDROXYL GROUPS	171
SAPONIFICATION VALUE (ESTER VALUE)	176
NEUTRALIZATION EQUIVALENTS, OR ACID VALUES, OF ORGANIC ACIDS	181
UNSATURATION	188
ACTIVE HYDROGEN	201
ACTIVE HYDROGEN: LITHIUM ALUMINIUM HYDRIDE METHOD	209
INORGANIC RESIDUE FROM ORGANIC COMPOUNDS	214
REFERENCES	216
 Chapter 31. THE DETERMINATION OF MOLECULAR WEIGHT	 221
INTRODUCTION	221
<i>Ebullioscopic methods (222). Cryoscopic methods (222). Vaporimetric method (222). Scale (222). Number average and weight average molecular weight (223)</i>	
EBULLIOSCOPIC AND CRYOSCOPIC METHODS	223
<i>Theoretical (223). Abnormal molecular weights (226). The Menzies differential thermometer (227). Solvents (230)</i>	
THE SEMI-MICRO EBULLIOSCOPIC METHOD	230
THE MICRO EBULLIOSCOPIC METHOD	240

CONTENTS

vii

THE CRYOSCOPIC METHOD	245
THE RAST CRYOSCOPIC METHOD	251
THE VAPORIMETRIC METHOD	256
APPENDIX 1. SOLVENTS	264
APPENDIX 2. THE MENZIES DIFFERENTIAL THERMOMETER: CONSTRUCTION, FILLING AND TESTING	266
LITERATURE TO BE CONSULTED	268
REFERENCES	268
LIST OF CONTRIBUTORS TO VOLUME III	270
INDEX TO VOLUME III	271