

CONTENT

	Page
Chapter 1 Introduction	11
References	17
Chapter 2 Balances and weighing	19
2.1 General discussion	19
2.2 Balances	21
2.3 Weighing	22
References	26
Chapter 3 The decomposition of organic substances	27
3.1 The Micro Carius method	27
3.1.1 Apparatus	27
3.1.2 Reagents	29
3.1.3 Procedure	29
3.2 Oxygen-flask combustion	30
3.2.1 Apparatus	31
3.2.2 Procedures	32
References	34
Chapter 4 Carbon and hydrogen	35
4.1 The Belcher and Ingram empty tube method	35
4.1.1 Apparatus	39
4.1.2 Reagents	44
4.1.3 Filling of combustion and absorption tubes	45
4.1.4 Procedure	46
4.2 Other methods	48
4.3 Environmental applications	49
References	49
Chapter 5 Nitrogen	51
5.1 The Dumas method	51
5.1.1 Discussion	51

5.1.2 The Coleman nitrogen analyser	53
5.1.3 Apparatus	54
5.1.4 Reagents	55
5.1.5 Procedure	56
5.2 The Kjeldahl method	62
5.2.1 Discussion	62
5.2.2 Apparatus	63
5.2.3 Reagents	66
5.2.4 Procedure	67
5.3 Other methods	69
References	70
 Chapter 6 Automatic C, H, & N analysers	 71
6.1 The Perkin-Elmer model 240 C, H & N analyser	71
6.2 The Carlo Erba analyser, models 1102 and 1104	79
6.3 General remarks on C, H & N analysers	80
6.4 Other analysers	81
References	81
 Chapter 7 Oxygen	 83
7.1 The Perkin-Elmer model 240	84
7.2 The Carlo Erba CHNO analyser	85
References	86
 Chapter 8 Chlorine	 87
8.1 General discussion	87
8.2 Method	88
8.2.1 Apparatus	88
8.2.2 Reagents	88
8.2.3 Procedure	89
References	91
 Chapter 9 Bromine	 92
9.1 General discussion	92
9.2 Method	92
9.2.1 Apparatus	92
9.2.2 Reagents	94
9.2.3 Procedure	94
References	96

Chapter 10 Iodine	97
10.1 General discussion	97
9.2 Method	98
10.2.1 Apparatus	98
10.2.2 Reagents	98
10.2.3 Procedure	98
References	99
Chapter 11 Halogens by the Carius method	101
11.2 Method	102
11.2.1 Apparatus	102
11.2.2 Procedure	103
References	105
Chapter 12 Fluorine	107
12.1 Discussion of the method	107
12.2 Method	108
12.2.1 Apparatus	108
12.2.2 Reagents	108
12.2.3 Procedure	109
References	111
Chapter 13 Sulphur	113
13.1 Sulphur by combustion method	113
13.1.1 General discussion	113
13.1.2 Apparatus	114
13.1.3 Reagents	115
13.1.4 Procedure	117
13.1.5 Alternative titrimetric finish	117
13.2 Sulphur by the micro-Carius method	117
13.2.1 Apparatus	117
13.2.2 Reagents	118
13.2.3 Procedure	118
13.3 Other methods	119
References	119

Chapter 14 Metals	121
14.1 The determination of sodium or potassium	121
14.1.1 Discussion of the method	122
14.1.2 Apparatus	122
14.1.3 Reagents	123
14.1.4 Procedure	123
14.2 The determination of copper	124
14.2.1 Discussion of the method	124
14.2.2 Apparatus	124
14.2.3 Reagents	124
14.2.4 Procedure	125
14.3 The determination of gold	125
14.4 The determination of iron	125
14.4.1 Discussion of the method	126
14.4.2 Apparatus	126
14.4.3 Reagents	126
14.4.4 Procedure	126
14.5 The determination of mercury	127
14.5.1 Discussion	127
14.5.2 Apparatus and reagents	128
14.5.3 Procedure (sulphide method)	128
14.6 The determination of nickel	128
14.7 Selenium and Tellurium	129
14.7.1 Apparatus	129
14.7.2 Reagents	129
14.7.3 Selenium	129
14.7.4 Tellurium	130
14.8 Other methods	130
References	130
 Chapter 15 Phosphorus, arsenic and germanium	 133
15.1 Phosphorus	133
15.1.1 Discussion	133
15.1.2 Apparatus	135
15.1.3 Reagents	135
15.1.4 Procedure	136
15.1.5 Other methods	137

15.2 The determination of arsenic	137
15.3 The determination of germanium	138
References	138
Chapter 16 Water by the Karl Fisher method	139
16.1 General discussion	139
16.2 Method	140
16.2.1 Apparatus	140
16.2.2 Reagents	141
16.2.3 Procedure	142
References	144
Chapter 17 Loss of weight in vacuo	145
17.1 Discussion of the method	145
17.2 Method	146
17.2.1 Apparatus	146
17.2.2 Reagents	148
17.2.3 Procedure	148
References	150
Chapter 18 Alkoxy and <i>N</i> -alkyl	151
18.1 Alkoxy groups (the micro-Zeisel method)	151
18.1.1 Discussion of the method	151
18.1.1 Apparatus	153
18.1.2 Reagents	154
18.1.3 Procedure	154
18.2 <i>N</i> -Methyl (and <i>N</i> -ethyl groups)	156
18.2.1 Discussion of the method	156
18.2.2 Apparatus	157
18.2.3 Reagents	158
18.2.4 Procedure	158
References	160
Chapter 19 The equivalent weight of acids and bases	161
19.1 Organic acids	161
19.1.1 Discussion	161
19.1.2 Apparatus	162
19.1.3 Reagents	163

19.1.4 Procedure	163
19.2 Organic bases	164
19.2.1 Apparatus	164
19.2.2 Reagents	164
19.2.3 Procedure	165
 Chapter 20 Acetyl and C-Methyl	 167
20.1.1 Discussion of the method	167
20.1.2 Apparatus	168
20.1.3 Reagents	169
20.1.4 Procedure	169
References	171
 Chapter 21 Molecular weight	 173
21.1. The Rast method	174
21.1.2 Apparatus	174
21.1.3 Reagents	175
21.1.4 Procedure	175
21.2 The ebullioscopic method	178
21.2.1 Apparatus	178
21.2.2 Reagents	180
21.2.3 Procedure	181
References	183
 Chapter 22 Boron	 185
22.1 Discussion of the method	185
22.2 Method	186
22.1.2 Apparatus	186
22.1.3 Reagents	186
22.1.4 Procedure	187
References	188
 Chapter 23 Silicon	 189
23.1 Fusion method	189
23.1.1 Discussion of the method	189
23.1.2 Apparatus	190
23.1.3 Reagents	190
23.1.4 Procedure	190

23.1 Carius method	191
23.2.1 Discussion of the method	191
23.2.2 Apparatus	191
23.2.3 Reagents	191
23.2.4 Procedure	191
References	194
Chapter 24 Active hydrogen	195
24.1 Discussion of the method	195
24.2 Method	197
24.2.1 Apparatus	197
24.2.2 Reagents	197
24.2.3 Procedure	198
References	200
Appendix A List of text books	201
Index	203