Contents

Foreword .		vi
Preface	•••••	į
Chapter 1	Introduction Energy Resources 1, Consumers of Energy 2, Management of Energy 2, Fundamentals of Refrigeration 4, Dimensional Units 4, Basic Data 6, Concentration Units 10, Computer Usage 11, Quality of Design Calculations 12, AAR Literature 13, Performance Data 13, Literature Cited 14	. 1
Chapter 2	Refrigeration	17
Chapter 3	Refrigerants Usable Refrigerants 34, Refrigerant Compression 35, Evaluation of Refrigerants 41, Multirefrigerant Cascades 43, Multicomponent Refrigerants 48, Refrigerant Brines 49, Gaseous and Solid Refrigerants 50, Ammonia as a Refrigerant 50, Other Absorption Refrigeration Systems 51, Literature Cited 52	33
Chapter 4	The Evaporator Equipment Design 54, Instrumentation 59, Supply of Refrigerant 60, Multiple Evaporators 62, Heat-Transfer Rates 66, Literature Cited 68	54
Chapter 5	Evaporator Pressure	69
Chapter 6	Evaporator Cascades	54

Chapter 7	The Ponchon Diagram
Chapter 8	The Absorber-Condenser
Chapter 9	Refrigerant Absorption Cascades
Chapter 10	The Fractionator—McCabe-Thiele Method 160 Rôle of Distillation Section 160, Basic Distillation Unit 161, The Fractionator Vessel 164, The McCabe-Thiele Method 165, Tray Efficiency 174, Cold vs. Hot Reflux Ratio 176, Literature Cited 179
Chapter 11	The Fractionator—Ponchon Method Principles of the Ponchon Method 180, Minimum Tray Requirement 194, Minimum Reflux Ratio 194, Combined Methods 205
Chapter 12	Superfractionation
Chapter 13	Complex Fractionation—Part 1 Flowsheet Variations 228, Eliminating the Stripping Section 231, Eliminating the Rectifying Section 243, Literature Cited 251
Chapter 14	Complex Fractionation—Part 2 Dual Feed Streams 252, Fractionator Sidestream Product 260, Fractionator with Multiple Reboilers 265, Split Feed Preheating 273, Circulating Reflux 277, Literature Cited 281

Chapter 15	Complex Fractionation—Part 3 Fractionator Bottoms Flash 282, Dual-Column Fractionation 288, Partial Condensation 297, Literature Cited 305	282
Chapter 16	Sources of Heat and Cold	306
Chapter 17	Industrial AAR Installations	327
Chapter 18	Efficiency, Economics, etc	366
Appendix A	Gas Compression	384
Appendix B	Steam-Jet Refrigeration	415
Appendix C	Lithium Bromide Absorption Refrigeration Design of Commercial Units 420, Energy Consumption 426	420
Appendix D	Pure-Component Data	
Appendix E	The Binary System: Ammonia-Water	441

Index