

CONTENT

	Page
Preface	vii
Acknowledgements	xv
PART 1 THE BASIS OF SUCCESSFUL INDUSTRY	
1. Businesses that Succeed...or Fail	3
The Purpose of Business	4
Management and Engineering	5
Customer-Conscious Management	7
Product-Conscious Management	10
References	11
2. Why Quality and Reliability?	12
‘Q & R’ is Basic	14
Ends before Means	14
Definitions	16
Value	18
The Advantages of Q&R	23
The Benefits Achieved	24
References	25
3. The Evolution of Quality and Reliability	26
The Pioneers	27
Opportunities Missed	31
A Return to Fundamentals	32
Some Pitfalls	37
References	38
PART 2 INDUSTRIAL ENTERPRISE	
4. The Manufacturing Complex	41
The Challenge to Management	42
Looking Both Ways	45
Business is a Two-Party Affair	46
The Intrusion of a Third Party	47
References	50
5. Conducting the Affairs of an enterprise	51
Management	52
Systematic Management	59
The Customer’s Responsibilities	62
The Supplier’s Responsibilities	67
The contract	70
Managing Affairs Efficiently	70
References	71
6. The Specification	72
The Purpose of the specification	74
Kinds of Specification	75
The Strength and Weakness of Standards	79
The Specification of a Specification	83
References	87

PART 3 EVOLVING THE PRODUCT SPECIFICATION

7.	The Engineering Function	91
	The Cost of Engineering	93
	The Function of Engineering	94
	The Methodology of Engineering	95
	References	98
8.	Engineering for Reliability	99
	The basis of Reliability Achievement	99
	Management's Contribution	105
	References	106
9.	The Fundamentals of Fatigue	107
	The Life-Stress Relationship	108
	Stress-Raisers	111
	Scatter or Variability	112
	Non-Destructive Testing	114
	An Engineering Approach	114
	Vibration Troubles	119
	References	121
10.	From Concept to Prototype	123
	Design in the Doldrums	124
	The Responsibilities of the Designer	124
	The Function of Design	127
	The Design Process	130
	References	138
11.	Proving the Design	139
	Development Justified	139
	Research and Development	142
	The development Function	142
	Hazards of Development Testing	151
	The Development Engineer	153
	References	154

PART 4 CONVERTING CONCEPT INTO REALITY

12.	Manufacturing Good Product	159
	Manufacturing, and Quality and Reliability	160
	The Involvement of Production Management	160
	Whose Responsibility?	161
	Improving the Situation	163
	References	165
13.	Buying Out	166
	The Responsibilities of the Purchasing Department	168
	The Responsibilities of the Supplier	169
	The contract	170
	Supplier Quality Assurance	171
	Vendor Rating	173
	A Guide for Management	174
	Incentive Contracts	175
	References	178
14.	Assuring the Quality of the Product	179
	The Verbiage of Q & R	180
	The Inspection Function	182
	The Function of quality Control	189
	Quality Assurance	201
	References	203

	PART 5 ENSURING CUSTOMER SATISFACTION	
15.	Product Support	207
	Product Support	209
	Technical Documentation	211
	Educating the User	213
	Attention to Customer Complaints	214
	The Provisioning of Adequate Spare Parts	215
	Keeping the Job Moving : the Quick Fix	215
	Maintainability	216
	Trend Analysis	217
	References	218
16.	Product Improvement	220
	Data Collection	223
	Extracting Information from the Data	226
	Types of Bathtub Curve	227
	Remedial Action	231
	References	232
	PART 6 FOR ACTION BY MANAGEMENT	
17.	Getting Things Going	235
	Making a Start	235
	Breaking through to Higher Levels of Performance	236
	Management Initiative	237
	Maintaining cooperative Effort	240
	References	242
18.	The Involvement of People	243
	Pointing the Direction	244
	Arousing an Interest	246
	Planned Motivation	249
	A Return to Earth	255
	References	255
	APPENDIX 1	
	The Quality Policy and Plan of Metalurgica de Santa Ana, SA	256
	APPENDIX 2	
	Techniques for the manager	265
	Index	277