

CONTENTS

	PAGE
PREFACE	v
ILLUSTRATIONS.....	xi
TABLES	xv
FOREWORD	xvii

PART I—GENERAL PRINCIPLES

CHAPTER 1. FUNCTIONS AND RESPONSIBILITIES	3
Sources of Information and Standards	5
Comments on Responsibilities.....	7
Summary.....	8
CHAPTER 2. ORGANIZATION	9
Development of Quality Control	9
Types of Inspection Organization	12
Other Factors Influencing Structure	18
Summary.....	20
CHAPTER 3. ECONOMICS OF QUALITY CONTROL.....	21
Determination of Economical Quality Control	23
The Cost-Conscious Attitude.....	23
Summary.....	24
CHAPTER 4. CONTROL OF QUALITY-DEPARTMENT COSTS	25
Factors Influencing the Cost of Quality Control.....	25
Summary.....	37
CHAPTER 5. REPORTS AND RECORDS	39
Rework and Rejection Reports	39
Records	43
Summary.....	47
CHAPTER 6. PERSONNEL TRAINING	49
Apprenticeship	49
Training Schools	50
In-Service Training	51
Combinations of Methods.....	52
Time of Conducting Training Courses.....	52

	PAGE
Economic Value of Training Courses.....	52
Summary.....	53
CHAPTER 7. RELATIONS TO OTHER DEPARTMENTS	54
Manufacturing	54
Engineering	55
Sales and Service.....	55
Production	56
Procurement	56
Subcontracting	56
Accounting	56
Summary.....	57
CHAPTER 8. CUSTOMER REPRESENTATIVES	58
Authority and Functions.....	58
Engineering Changes.....	59
Materials	59
Processes	60
Procedures	60
Finished Product.....	61
Summary.....	61
 PART II—STATISTICAL METHODS 	
CHAPTER 9. PRINCIPLES OF STATISTICAL METHODS	65
Collection of Data—Random Samples and Subgroups.....	66
Mathematical Probability—Dice Analogy.....	67
The Normal Curve of Error.....	69
The Sample Standard Deviation.....	71
The Sample Range	73
Estimate of Universe Average and Universe Standard Deviation from Small Samples	73
The Standard Error of Sample Averages, Standard Deviations, and Ranges.....	74
Standard Error of a Sample Percentage.....	77
Skewed Distribution	80
The Poisson Distribution.....	82
Summary.....	83
CHAPTER 10. SAMPLING INSPECTION	86
Sampling Considerations	86
Lot Quality Protection Plan	87
Average Outgoing Lot Quality Protection Plan	89

CONTENTS

ix

	PAGE
Relative Advantages of the Two Plans.....	89
Minimum Sample Size for Lot Quality Protection Plan	91
A Simplified Lot Quality Protection Plan	93
An Economic Lot Quality Protection Plan	95
Bell Telephone Laboratory Dodge-Romig Tables	96
Summary.....	106
 CHAPTER 11. PROCESS CONTROL.....	108
Theory of Process Control	109
Practical Applications.....	113
Summary.....	133
 CHAPTER 12. SPECIALIZED APPLICATIONS	136
Treatment of Raw Data	136
The Frequency Distribution—Large Samples	138
Average and Standard Deviation—Small and Large Samples	147
Summary.....	151
 CHAPTER 13. FURTHER SPECIALIZED APPLICATIONS.....	153
Sample Averages and Standard Deviations—Small Samples.....	153
Sample Averages and Standard Deviations—Large Samples.....	165
Design of Tests	174
Summary.....	174
 CHAPTER 14. THE PRACTICAL APPLICATION OF STATISTICAL METHODS	178
The Problem and Its Difficulties	178
Manufacturing Applications.....	179
Control of the Program	182
Summary.....	182
 APPENDIX	185
Tables	185
Glossary of Symbols	194
Summary of Equations.....	196
Statistical References	197
 INDEX	199