

CONTENTS

CHAPTER I

HISTORY OF THE SLIDE RULE

ARTICLE	PAGE
1. Introduction.—Logarithms	1
2. Logarithmic Multiplication and Division and the Invention of the Slide Rule	3
3. Improvement and Development of the Slide Rule in England	6
4. The Slide Rule in France	9
5. The Mannheim Slide Rule	13
6. Recent Developments	15
7. The Slide Rule in the United States	16

CHAPTER II

THEORY AND OPERATION OF THE MANNHEIM SLIDE RULE

A. THEORY OF THE RULE

8. Some Properties of Exponents	21
9. Logarithms	23
10. Principle of the Slide Rule	25
11. Application of the Slide Rule Principle	30
12. The Standard Mannheim Slide Rule	33

B. OPERATION OF THE RULE

13. Division and Reading of the Scales	35
14. Multiplication with the Slide Rule	40
15. Division and Reciprocals	48
16. The Decimal Point in Slide Rule Multiplication and Division	53

ARTICLE		PAGE
17. Combined Multiplication and Division		58
18. Proportion		62
19a. Squares, Cubes and Roots		63
19b. Use of Gauge Points on the A and B Scales		73
20. The Inverted Slide		74
21. The Scale of Equal Parts (L) and Its Use		78
22. The Sine Scale (S) and Its Use		80
23. The Tangent Scale (T) and Its Use		84

CHAPTER III

MODIFIED FORMS OF THE MANNHEIM RULE AND THEIR USE

A. THE POLYPHASE MANNHEIM SLIDE RULE

24. The Polyphase Mannheim Slide Rule		88
25. The Inverted C Scale and Its Use		90
26. The Cube Scale and Its Use		95

B. THE POLYPHASE DUPLEX SLIDE RULE

27. The Duplex Slide Rule and the Folded Scales		99
28. Operation of the Polyphase Duplex Slide Rule		102

C. THE LOG-LOG DUPLEX SLIDE RULE

29. Natural Logarithms and Exponentials		109
30. Exponentials, Powers and Roots and the Slide Rule		115
31. The Log-log Scale and the Log-log Duplex Slide Rule		117
32. Use of the Log-log Scales		121

D. THE SLIDE RULE IN TRIGONOMETRY

33. Introductory		133
34. Radian and Degree Angle Measure Conversion		134
35. Solution of Right Triangles		135
36. Solution of Oblique Triangles		140
37. Slide Rule Check of Logarithmic Solutions		146
38. Interpolation of Logarithms		147

CHAPTER IV

TYPICAL PROBLEMS AND SLIDE RULE SETTINGS

	PAGE
A. INTRODUCTION	151
B. TYPICAL PROBLEMS AND SETTINGS FOR A, B, C, AND D SCALES	152
C. TABLES OF CONVERSIONS AND GAUGE POINTS FOR C AND D SCALES	164
D. SETTINGS FOR POLYPHASE MANNHEIM RULE	171
E. SETTINGS FOR POLYPHASE DUPLEX AND LOG-LOG DUPLEX RULES	177
F. SETTINGS AND TYPICAL PROBLEMS INVOLVING THE LOG-LOG SCALES	185

CHAPTER V

EXERCISES AND ANSWERS

Exercises	204
Answers	213