The Theory and Operation of the Slide Rule, John P. Ellis, 1961

From the Preface, "This book is primarily intended to serve as a text for class instruction at the college level. However, because of its nature it can also be used effectively for self-study by anyone with the basic mathematical background of logarithms (for multiplication and division) and of algebra and trigonometry (for the remaining operations). For advanced students it can be a valuable reference for review and instruction in the more complex operations." The book is aimed at scientific and engineering students; there is no mention of commercial or trades applications. Although a basic mathematical background is suggested, the completeness of the text should cover situations where the reader's background is a little weak. Also from the Preface, "Pertinent mathematical concepts, such as decimal fractions, algebra, trigonometry, logarithms, notation by powers of ten, and approximate computation are either reviewed in the text or included in the Appendix for review."

Fundamental theory upon which slide rule operation is based is presented, but not in an overbearing manner; emphasis is on the use of the rule. Examples within chapters and end-of-chapter problems are purely numerical but Chapter XIII, entitled, "Problems From Science and Engineering", contains 46 application problems in basic mechanics, electricity & magnetism, chemistry, civil engineering, etc. The answers are provided.

The text is based on the use of the log-log duplex decitrig rule and the scale set used is typical of that type of rule. No specific manufacturer is recommended or discussed in the body of the text, although K&E is mentioned and discussed in an appendix. Illustrations used in the book are line drawings, not photographs of specific rules. The existence of vector types of rules to evaluate hyperbolic trig functions is briefly mentioned.

The book's appendices enhance its value as a reference text. They include: The History of the Slide Rule, Exponential Relations, Logarithms, Standard Numbers (Scientific Notation), Significant Figures and Slide Rule Limitations, Slide Rule Adjustment and Care, Types of Slide Rules (circular, spiral, and cylindrical), Bibliography, 4-place Log Tables, and Tables of Trig Functions in Degrees and Decimals. The 4 1/2 page index is adequate.

Steve K. Seale. 2013