THE SLIDE-RULE, AND HOW TO USE IT: CONTAINING FULL, EASY AND SIMPLE INSTRUCTIONS TO PERFORM ALL BUSINESS CALCULATIONS WITH UNEXAMPLED RAPIDITY AND ACCURACY

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The Slide-Rule, and How to Use It: Containing Full, Easy and Simple Instructions to Perform All Business Calculations with Unexampled Rapidity and Accuracy by Charles Hoare

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CHARLES HOARE

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BY

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AUTHOR OF "MENSURATION MADE EASY," ETC. ETC.

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PREFACE.

To those who have once acquired a knowledge of the capabilities of the Slide Rule, it is ever a matter of surprise that an instrument combining such unexampled rapidity, ease, and accuracy in performing all ordinary business calculations, should be so little known. By its assistance the drudgery of computation is avoided, and the time and trouble expended on mere arithmetical workings proved to be a waste of effort; in fact, its aid mentally may safely be compared with the advantages derived from mechanical appliances in ameliorating the wear and tear of manual labour.

The intellect remains unfettered by tedious processes, for the statement of each question, the operation and the result, are simultaneous and apparent in their connection. The laws that govern its operations are few and simple, and easily understood; and the curiosity of the uninitiated may be stimulated by learning, that on an instrument as portable as a pocket-book we have the whole gamut of numbers; and that whether as a means for self-instruction or advancement, for unsurpassed utility in business, or for profitable amusement, its study is well rewarded in its capabilities for varied application. Scientific men estimate its value, the man of business would soon appreciate its assistance, and it will be well for the practical mechanic when he learns how to employ it intelligently, instead of carrying it in his pocket, yet unable to avail himself of its extraordinary powers.

The disuse of the Slide Rule in ordinary calculations, in face of its proved capabilities, suggested the idea that either

its construction, or the method of teaching, or perhaps both, might be capable of amendment. The adept may smile at the proposal to modify an instrument already simple enough to him, but there is evidence that, to make it available to many, it must first be made easy to all; for, generally speaking, its use has to be acquired by self-teaching, and if the professed instructions be not clear enough to pilot the beginner through the *seeming* difficulties of a new study, they are useless.

Sufficient introductory matter, and ample explanation, are needed to familiarise the student with the subject and its advantages. Treatises have been printed by the score, but Bevan, Woolgar, and other scientific writers, are scarcely before the public; while some are above, and many below general comprehension. To be popular, such matter must be plain. Abler pens might have invested the subject with greater interest; my aim has been simplicity of method and arrangement. Through the liberality of the present publishers of Weale's useful series, I have been unrestricted in space and detail; and believing that earnestness and accuracy may be accepted in lieu of higher pretensions, I trust that the large amount of information embodied in the work will prove acceptable and useful.

CHARLES HOARE.

SOUTHAMPTON,
November, 1867.

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THE SLIDE RULE.

INTRODUCTORY AND EXPLANATORY REMARKS.

THE combinations of the Slide Rule, like the elementary processes in Arithmetic, are few and simple, but their application is almost unlimited. Its action being mechanical, the working can happily be illustrated *without written rules*, in lieu of which, a copy of the position of the lines and figures, in fact, a diagram of the statement for each class of operations, is given, and the directions fully detailed in No. 6 of these Notes. The following memoranda, necessarily ample, are descriptive merely, enforcing no tax upon the memory after the explanations of the lines, numbers, and divisions on the Rule are clearly comprehended. No pains have been spared to render these preliminary instructions as concise and clear as possible. The successful practice of all that follows depends upon their being thoroughly *understood;* in such hands the Slide Rule is an intelligible and powerful instrument;—in others a mere tool.

1st. All numbers and divisions are to be read decimally, for all the spaces are, or are supposed to be, divided and subdivided into tens and tenths; the visible marks may describe fifths, or halves—these are still equal parts of ten. Where the spaces do not admit of subdivision, the proportions of $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$ must be estimated; and when the eye grows accustomed to the scale, with a little practice, tenths of a division may be judged with great accuracy.

2nd. The figures on the Rule are engraved simply as 1, 2, 3, &c.; but these numbers are arbitrary, and *any* required value may be assigned; thus, a 2 may be called 2 or 20, or 200; if it is borne in mind that the whole line is affected during that operation.

Ex.: A 2 being called 20 the 3 is 30, and so on throughout the Scale on that line, but *different lines* may bear different values if the proportions are maintained, a simple case will illustrate this point.