INSTRUCTIONS

FOR THE USE OF

A. W. FABER'S

IMPROVED

CALCULATING RULE.

BY

CHARLES N. PICKWORTH, Wh. Sc.,

Author of "The Slide Rule," etc.

MANUFACTORY ESTABLISHED 1761.

Gold and First-class Prize Medals.

GRAND PRIX (HIGHEST AWARD) PARIS, 1900.

MANUFACTORIES IN

GERMANY, FRANCE, AND UNITED STATES.

HOUSES IN

LONDON, PARIS, BERLIN AND NEW YORK.

A. W. FABER,

78, READE STREET, NEW YORK.

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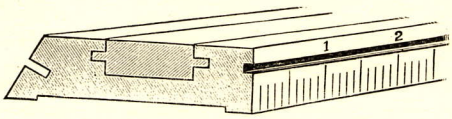
INSTRUCTIONS

FOR THE USE OF

A. W. Faber's Improved Calculating Rule.

REDUCED SIZE.



SECTIONAL VIEW, FULL SIZE.

Introduction.

It is a somewhat surprising fact that in an age in which such an immense amount of attention is given to labour-saving tools and appliances generally, so little advantage has been taken of the Calculating Rule—an instrument which offers a ready means for mechanically performing all the varied calculations which are required by the engineer or architect, the chemist or the power user.

It must be admitted, however, that latterly the merits of the Calculating Rule have become more generally recognised and its advantages more fully understood; hence there is little doubt that the instrument will become much more popular in the future than it has been in the past.

The great improvements effected in the Calculating Rule by the addition of the "runner," as well as by the adoption of a systematic arrangement of the various scales, have done much to encourage the use of the instrument, but a concise and practical handbook explaining its many and varied uses is, however, indispensable to the fullest appreciation of the merits of this useful instrument. This the writer has endeavoured to supply.

The Construction of the Calculating Rule.

The A. W. Faber Calculating Rule consists of a "stock" or "body" about 10 inches in length, $1\frac{1}{4}$ inches in width and $\frac{3}{8}$ inch in thickness. In this stock a groove is formed which carries a moveable strip or "slide," the upper surface of which is level with that of the stock of the rule. Upon the "face" of the rule thus formed, four scales are engraved, one near the upper edge of the slide being

adjacent to a precisely similar one on the upper part of the stock: while another near the lower edge of the slide has adjacent to it a precisely similar scale on the lower part of the stock of the rule.

In close proximity with the face of the rule, the "runner" is arranged to slide freely backwards and forwards. In some instruments the runner consists of a metal strip, bridging over the several scales, and provided with chisel-like projections which lie over the scales, and the edges of which may be brought to any division line of the scales as required.

In the A. W. Faber Rule a form of runner is used which is much to be preferred to the foregoing. This consists of a light metal frame, sliding as before in small grooves formed in the edges of the stock of the rule, and containing a piece of glass about 1 inch square, in the centre of which is a fine black line, which can thus be brought over any division line. One great advantage of this arrangement is that it leaves visible the adjacent graduations of the several scales, thus enabling the operator to readily assign the correct value to the reading sought.

In several other respects this form of runner will be found greatly superior to the more usual form, especially noticeable being the facility with which the settings may be made in complicated calculations.

The A. W. Faber Calculating Rule has usually been made of well-seasoned boxwood. Recently, however, an improved form has been introduced, in which the boxwood body is provided with celluloid facings upon which the several scales of the instrument are engraved. The white surface of the celluloid throws the division lines into more distinct relief than is the case with the all-boxwood construction, and in general it is less fatiguing to the eyes.

The only objection to the celluloid-faced rule is, that this facing material is somewhat unreliable under variations of atmospheric conditions. However, as the graduations of the Calculating Rule are in every case *comparative* and not *absolute*, the expansion and contraction cannot affect the accuracy of the instrument.

The Scales.

Reference has already been made to the fact that the face of the Calculating Rule has four scales engraved thereon. The upper one of these, found on the stock of the rule, is usually designated the "A" scale. Immediately adjacent to it is a precisely similar scale on the