



Review

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REVIEWS.

Practical Integration. By A. S. PERCIVAL, M.A. Pp. 86. Price 2s. 6d. net. (Macmillan & Co., 1907.)

In this book, which is attractively got up, the principal methods of integration are clearly set forth, and their utility illustrated by examples on areas, volumes, centres of gravity, moments of inertia, etc.

The view of Integration as a method of effecting a summation is developed very slightly: and no allusion is made to any of the difficulties which are involved in exhibiting the limit of a sum as an integral. On page 36 it is stated that if one is reduced to expanding the integrand in a series, and integrating term by term, "it is absolutely necessary that the series should be a convergent one." Did not the author, when he wrote thus, forget for one moment the blessed word "practical" on his title page?

By repeated integration by parts we find

$$\int_x^\infty e^{-x^2} dx = e^{-x^2} \left\{ \frac{1}{2x} - \frac{1}{4x^3} + \frac{1.3}{2^2 x^5} - \frac{1.3.5}{2^4 x^7} \dots \right\},$$

and the series on the right is divergent.

But the error in taking the sum of any number of terms as the value of the integral is less than the first term omitted, and so the method is of some practical utility, although only the condition stated can ease the conscience of the rigorist.

C. S. J.

Introductory Mechanics. By E. J. BEDFORD. Pp. x, 141. Price 1s. 6d. (Longmans, 1908.)

This is in many respects an excellent little compilation. The diagrams are clear, the technical examples of principles are well chosen; and if sometimes we find a rule where we should like to find a reason, the limitations of 140 pages must be borne in mind.

But in one respect the book is unfortunately typical of a class. The 'practical man' has a severe training under the hardest of masters in accuracy of work. No one knows better that a rod $\frac{1}{8}$ at one end and $\frac{1}{4}$ at the other is not a cylinder $\frac{3}{8}$ inch in diameter. But for some reason he does not appreciate the importance of accuracy of language.

The present work is above the average of 'practical' books in carefulness of style, but even here we find on p. 14, after a definition of force based on Newton's first law, a list of various forces, viz. heat, electricity, gravity, and muscular force. Next follow directions for representing a force by a straight line.

C. S. J.

Graphics: applied to Arithmetic, Mensuration and Statics. By G. C. TURNER, B.Sc. Pp. ix, 388. 1908. (Macmillan & Co.)

At the very beginning of Mr. Turner's book is a statement to which exception must be taken.

"The standard scale . . . should be divided into fiftieths of an inch and . . . millimetres or half millimetres."

No young student should ever possess or use a scale with any finer division than tenths of an inch or perhaps millimetres.

The use of an excessively fine scale (*a*) is very injurious to the sight; (*b*) continually causes mistakes in counting; (*c*) prevents the student from acquiring the valuable habit of judging subdivisions accurately by eye.

The excellent diagrams form a striking feature of the book, which consists in great part of worked-out problems. In fact, the criticism one is driven to make is that the book is overweighted by examples. The principles of graphical methods are few in number, and once they are clearly stated the student ought to make the simple and direct applications for himself.

Without going so far as to advocate expounding the principles of graphic statics on the traditional half sheet of notepaper, one may suggest that to devote 370 closely printed pages to the treatment of examples by purely graphical, excluding analytical methods, is to err by excess.

C. S. J.