for three principal reasons, its embodiment of the results of the latest research, its carefully arranged sequence of theorems, and the emphasis which it lays on applications and illustrations.

ARTHUR RANUM.

## SHORTER NOTICES.

*Histoire des Mathématiques.* Par W. W. ROUSE BALL. Edidition française revue et augmentée. Traduite sur la troisième édition anglaise par L. FREUND. Tome deuxième. Avec des additions de R. de Montessus. Paris, A. Hermann, 1907. vi + 271 pp. 8 francs.

IT was natural to hope that Lieutenant Freund would succeed better with his second volume of Ball than he did with the first,* since he received warnings enough at the hands of numerous reviewers. In a way the hope has been realized, although in the mere matter of translation and of accuracy there is, unfortunately, no improvement.

The valuable part of this second volume, as it appears in its French form, lies in the additions made by M. R. de Montessus, ' docteur ès-sciences mathématiques, lauréat de l'Institut.' These are numerous, particularly with respect to French mathematics, and they materially increase the helpfulness of the work as a book of reference. The period treated, being that beginning with Newton and running to the close of the nineteenth century, is one of great interest from the standpoint of the Paris mathematicians, and it was natural that a Cambridge writer could hardly do full justice to the labors of writers like l'Hospital, Varignon, De Montmort, D'Alembert, Laplace, and several others whose works Mr. Ball has briefly described. Other continental authors that are hardly mentioned at all in the English edition have fairly adequate biographical notices in the translation, and on this account the additions of Dr. de Montessus are particularly helpful. Among the added names are Meusnier, Lhuillier, Agnesi, Lacroix, Malfatti, Delambre, Montucla, Laurent, Cournot, Genocchi, Betti, Puiseux, Bouquet, Codazzi, Faà di Bruno, Catalan, Brioschi, Casorati, Halphen, Wronski, Bertrand, Laguerre, Stieltjes, Clebsch, Dupin, Chasles, Bellavitis, Cremona, Beltrami, Poinsot, Tisserand, and several others, none of whom are treated, or who at most are merely men-

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* See review in the BULLETIN, vol. 12, p. 309.

tioned, in the English edition. Curiously enough it required a
French translation to mention Waring, who one time held
the Lucasian professorship, and whose "identity" would seem
to have merited the insertion of his name, at least, in such an
English work.

Unfortunately for the best use of the book, there is no index,
and the table of contents is not sufficient to make up for the
omission. Of all works, one of this nature, to which a stu-
dent must often refer for a single topic or name, should have a
complete index covering both volumes.

It has been said that the translation is not much of an im-
provement upon that of the first volume. If any proof of
carelessness is needed, a glance at the table of 117 errata dis-
covered by the author himself should suffice. But he has by
no means covered the list, for even the casual reader will find
scores of others. For example, for logarihmotechnica (page
14) read logarithmotechnia, and on the same page for $x^{m-n-1}$
read $x^{mn-1}$ twice; for $1 - y'^2$ read $1 - y^2$ (page 28); in Amér-
ican, an English word, drop the accent (page 53); for $V^2_2$
read $V_2^2$ (page 54); for sin $x + i$ cos $x$ read cos $x + i$ sin $x$
twice on page 72, thus correcting an error that still exists in
the fourth English edition, which has appeared since the transla-
tion, and on the same page change the date of De Moivre's
death to 1754; spell the French for Edinburgh uniformly,
both Edimbourg and Edinbourg appearing on page 73, and
elsewhere; change Simpson's birth year from 1610 to 1710
(page 77); for "Arithmetic of lines" read "Arithmetic of
sines" (page 82); for Englisch read English (page 89); for
1771 read 1781 (page 122). These are only typical of a con-
siderable number of similar errors that will strike the reader,
and they go to show how carelessly the work has been per-
formed. We should be thankful for the added matter, but we
might reasonably have hoped for a translation with a minimum
instead of a maximum number of errors.

<div align="right">DAVID EUGENE SMITH.</div>

*Geschichte der Mathematik. I. Theil. Von den ältesten Zeiten
bis Cartesius.* Von Dr. SIEGMUND GÜNTHER. Leipzig,
G. J. Göschen'sche Verlagshandlung, 1908. 8vo. 56 fig-
ures. viii + 427 pp. 9 Marks.

THE great interest manifested of late in the history of mathe-
matics, evidenced by the fourth volume of Cantor, the enlarged