amount of space is devoted in the present volume are theory of aggregates (12 pages) and integral equations with applications (8 pages). The contributions dealing with these two subjects are due to G. Hessenberg and O. Toeplitz respectively. The article on Fermat's last theorem (6 pages) is due to A. Fleck. This article was suggested by H. A. Schwarz, and should be especially welcome to editors of journals in view of the fact that many papers on this subject are now being offered for publication by authors who are not familiar with the literature.

While the number of references is not relatively as large as one would expect in a larger encyclopedia, yet this number is considerable, and sufficient to exhibit to the general reader the fact that rapid advances are being made, since many of the references are to the works of men who are still living. Such small books are extremely useful to secure a more rapid dissemination of important new knowledge and thus to secure for scientific workers a more general recognition. It seems unfortunate that we do not have a similar work in English. Possibly the success of this series may encourage some English publisher to fill the gap which is as serious with us as it was in Germany before the appearance of the first volume of this Taschenbuch.

G. A. MILLER.

Introduction a la Thēorie des Nombres algēbriques. By J. SOMMER, translated from the German by A. LEVY, with a Preface by J. HADAMARD. Paris, A. Hermann et Fils, 1911. x + 376 pp.

SOMMER'S "Vorlesungen über Zahlentheorie," which was published in 1907, was the first book to present in form really available to the beginner, the elements of the theory of algebraic numbers as developed by Kummer, Dedekind, and Hilbert. By devoting the greater part of his book to quadratic and cubic number realms, with applications to other branches of mathematics, Sommer rendered a real service to students who wish to become acquainted with this beautiful theory. The German edition has already been reviewed by Professor Ling,* whose favorable opinion has been borne out by the appearance of the French translation within four years of the publication of the original.

* Ling, BULLETIN, vol. 13, No. 3, December 1907.

The translation has been faithfully made and will be most welcome to students who find German the more difficult language. The words "revue et augmentée" which appear on the title page are not to be too seriously taken, for they are certainly not warranted by the changes that have been made. The introductory chapter, which is devoted to divisibility of integers, the φ-function, congruences, and Fermat's theorem, has been cut down from seventeen to fifteen pages. Concerning the demonstration of the unique factorization theorem for rational integers the translator says in a foot-note: "Cette démonstration étant enseignée dans toutes les écoles françaises, je me suis permis d'abréger ici un peu le texte de M. Sommer." In a few other places we find omissions of unimportant statements. In the list of examples given in section 16 for the determination of the class number, the translator has substituted for the realm $k(\sqrt{31})$, the realm $k(\sqrt{79})$, which has the same class number. The increase in the number of pages from 361 to 376 is due mainly to two things: In the French edition the page is shorter, and greater display is given to the equations, matters which add materially to the appearance of the book.

On page 188, at which point Sommer's proof that the special Fermat's equation

$$x^3 + y^3 = z^3$$

has no solution in integers begins, the translator has very generously changed the heading from "Entwicklung von Legendre" to "Démonstration de M. Sommer." The complete omission of the name of Legendre, who used the principle employed, as Sommer tells us, "in seiner einfachsten Form," seems scarcely warranted.

In a gracefully written preface M. Hadamard deplores the neglect—"si étrange qu'il puisse paraître dans la patrie d'Hermite"—into which the theory of numbers has fallen in France and expresses the hope that through the recently renewed activities in this direction at the University of Paris, and the fact that French students have now an adequate text at their disposal, conditions will soon change.

Unfortunately the book, which is printed in excellent type, on good paper, and with wide margins, is seriously marred by the fact that the proof reading has been abominably done. No less than forty-seven errors, to say nothing of omission of punctuation marks, have been found in the first thirty pages of Chapter II. Of course, most of the errors would be easily detected, even by the casual reader, but when the text is made to speak of the discriminant of the realm as "le plus grand diviseur des nombres entiers du corps" (page 26), the beginner may have some trouble in supplying the omission. The same thing is true of the omission of the word "premier" in the statement of the theorem on page 65. In many places, as on page 49, where several equations are printed in one line without commas between, the right member of one and the left member of the following one appear as a product. Again, on page 65 where examples are given to illustrate the use of the symbol $(\frac{d}{p})$ to determine in what way the principal ideal (p) can be broken up into ideal factors, we find the word "Corps" in a line by itself followed in the next line by

$$k(\sqrt{-5}) \quad m = -5 \quad d = -20$$

without any punctuation whatever, just as though m and d were necessary to define the realm.

The book would have been greatly improved for the general reader by printing the theorems in italics instead of in Roman characters.

The reader who glances over the table of contents and finds the entry "Index" will wonder if Frenchmen are reforming in the matter of indexes. But his surprise will be quickly turned to disappointment when he finds that the word is only a translation of Sommer's "Literatur-Verzeichnis" referring to the list of tables relating to the theory of numbers.

E. B. SKINNER.

An Introduction to the Infinitesimal Calculus—Notes for the use of Science and Engineering Students. By H. S. CARSLAW, Professor of Mathematics in the University of Sidney. Second edition, 1912. Longmans, Green and Co. xvi + 137 pp.

As indicated in the subtitle and in the preface, this little book is intended for first year students in the engineering schools of universities and technical colleges. It presumes a preparatory knowledge of trigonometry and elementary algebra, only. The first edition (1905, x + 103 pages) demanded a knowledge of infinite series for the deduction of the formulas for differentiating e^x and $\log x$; in the present edition