

rand's own contributions, and a single reading will show that it is written by one who has not merely made a compilation of the works of others, but who possesses in addition that intimate acquaintance with the subject which is only obtained by those who have advanced it at least in some directions. Whatever the defects of the book may be, it will take a high rank amongst the many classic treatises on celestial mechanics. If we might venture to make a suggestion, it would be that a full alphabetical index of subjects and names be appended to the fourth volume, thus adding greatly to the value of the series as books of reference. The increasing labor of finding out what has been done in a subject makes such an index almost necessary.

ERNEST W. BROWN.

HAVERFORD COLLEGE, PA.

BACHMANN'S THEORY OF NUMBERS.

Die Elemente der Zahlentheorie. Von PAUL BACHMANN.
Leipzig, Teubner, 1892. 8vo, xii + 264 pp.

"The most beautiful theorems of higher arithmetic have this peculiarity, that they are easily discovered by induction, while on the other hand their demonstrations lie in exceeding obscurity, and can be ferreted out only by very searching investigations. It is precisely this which gives to higher arithmetic that magic charm which has made it the favorite science of the first mathematicians, not to mention its inexhaustible richness, wherein it so far excels all other parts of pure mathematics."—GAUSS.

Interest in the theory of numbers has, perhaps naturally enough, not always remained at the high-water mark indicated in the above encomium, though there is not wanting a list of illustrious names, reaching down to the present generation, of those who have made important contributions to the theory. Within the last decade there have appeared translations of classic works of the highest importance, one at least grown well-nigh inaccessible in the original, as well as quite a number of text-books on the subject. During the last three years there have appeared text-books, each with its own points of merit, in the languages English, French, and German.* All these recent publications point to a strong interest in the theory of numbers now existent, and at the same time give promise that the increased facilities for study will give a fresh impetus to research in this field.

* Respectively by Mathews, Lucas, and Bachmann.