matical studies of the college student, or to mark the completion of formal mathematics for the prospective engineer, or be but the stepping stone to further advanced study for the mathematical student, the arrangement and the presentation in this volume will materially aid the teacher and student. There is sufficient of the spirit of research and rigorous analysis to meet the demands of the last class, while the necessities of the others have not been neglected. The lists of problems are of sufficient variety and extent to meet all ordinary requirements. It will be quite clear to the careful reader that both in illustrations and in exercises, the author has avoided those examples which, however interesting in themselves, present their greatest difficulty or interest because of the dynamics, physics, or other science involved, and beyond that shed little or no new light on the methods of the calculus. In fact the field of dynamics is entirely avoided. On the other hand the author does not attempt to conceal or minimize the real difficulties of calculus by employing trivial examples. The answers to all exercises are conveniently assembled at the end of the text. The index is exceptionally complete. There is no doubt but that this text will be a valued addition to the teacher's library and will find a deserved admission into many class rooms.

D. D. LEIB.

Theorie der Zahlenreihen und der Reihengleichungen. By ANDREAS VOIGT. Leipzig, Göschen, 1911. viii + 133 pp.

THE two fundamental ideas which underlie this work are the following:

1. Instead of considering a number as isolated, one may think of it as belonging to a sequence. Thus the question as to whether b is divisible by a is the question as to whether b belongs to the sequence $\cdots, -2a, -a, 0, a, 2a, \cdots$.

2. Instead of expressing an integer N as a polynomial in x of the form

$$N = a_0x^n + a_1x^{n-1} + \cdots + a_{n-1}x + a_n,$$

one may write it in either of the forms

$$N = b_0x(x-1)\cdots(x-n+1) + b_1x(x-1)\cdots(x-n+2) + \cdots + b_{n-1}x + b_n,$$

$$N = c_0x(x+1)\cdots(x+n-1) + c_1x(x+1)\cdots(x+n-2) + \cdots + c_{n-1}x + c_n.$$

These ideas are not new; but the author has sought to make a systematic use of them in developing a theory of number sequences. Two such fundamental number sequences are considered, each of which is a generalization of a sequence of binomial coefficients. Several important sets of numbers can be expressed in terms of these fundamental sequences, as for instance the set of figurate numbers in which the rth term of the nth row equals the sum of the first r terms of the $(n-1)$th row, the first row being $1, 0, 0, \cdots$. A general theory of the two fundamental sequences is developed and the results are applied to several questions in number theory; as, for instance, the solution of congruences and diophantine equations. The methods employed are such that they cannot be explained briefly.

R. D. CARMICHAEL.

NOTES.

BEGINNING with volume 20 (1913), the *American Mathematical Monthly* will be in charge of an editorial board composed of representatives of nine supporting institutions, together with Professor B. F. FINKEL, the founder of the journal and editor since its inception in 1894. The contributing institutions are Colorado College and the Universities of Chicago, Illinois, Missouri, Minnesota, Nebraska, Kansas, Indiana, and Iowa. The editorial representatives are Professors FLORIAN CAJORI, H. E. SLAUGHT, G. A. MILLER, E. R. HEDRICK, W. H. BUSSEY, W. C. BRENKE, C. H. ASHTON, R. D. CARMICHAEL, and R. P. BAKER. The managing editor is Professor Slaught.

It will be the editorial policy of the *Monthly* to make a strong appeal to the great body of teachers in the collegiate and advanced secondary fields, not only directing attention to questions of improvement in teaching but also fostering the development of the scientific spirit among large numbers who are not now reached by the more highly technical journals. The publication of original papers will be continued, but greater attention than heretofore will be given to pedagogical and historical questions of interest and value to teachers of collegiate mathematics. An index of volumes 1–19 will soon be issued.