Proofs are indicated only in a few places. With these exceptions, the presentation is consistently limited to definitions of the fundamental concepts, to the associated formulations, and to the final results. Fortunately especial stress is laid on the algebra of vectors and tensors.

The first ten chapters are devoted to pure mathematics as may be inferred from the following chief headings: algebra, differential and integral calculus, series, functions, transformations, differential equations, linear integral equations, calculus of variations, theory of probability, and vector analysis. The remaining chapters and the appendix really constitute an outline of a valuable course in theoretical physics. More specificially, the fields represented are mechanics, electricity, theory of relativity, thermodynamics, quantum theory, and a few physical applications of the calculus of probability. A short list of authoritative references is appended to each chapter.

The second edition differs from the first principally in certain additions such as boundary problems, tensor analysis, theory of the top, the general relativity theory, and the quantum theory. The printing is very clear, the spacing is adequate, and typographical errors seem to be absent. In the reviewer's opinion this book merits the attention of all lecturers on applied mathematics and a working knowledge of its contents should be a minimum requirement in mathematics of all candidates for the degree of doctor of philosophy in physics.

H. S. UHLER

Binomial Factorizations, Vol. V. By A. J. C. Cunningham. London, Francis Hodgson, 1924. lxxii+120 pp.

This volume is one of a set of seven giving the smallest roots of the congruence $y^n \pm 1 \equiv 0 \pmod{p}$ with p running through the available primes (of the form $2nx+1$) to various high limits. From these tables the author builds up factorization tables for different values of y. Thus from the table of roots of $y^{11}-1\equiv 0 \pmod{89}$, namely: 2, 4, 8, 16, 32, 39, 45, 64, 67, 78, he is able to insert a factor 89 in the list of divisors of what he calls "Simple Undecimans" (that is to say in the divisors of $(y^{11}-1)/(y-1)$) opposite the corresponding values of y. This table of "Simple Undecimans" runs to $y=100$, and contains only 36 complete factorizations. To get these factorizations over nine hundred congruences had to be solved and over nine thousand roots listed. The corresponding table $n=13$ gives only 26 complete factorizations in the first hundred "Simple Tredecimans" as the result of solving some 800 congruences and of listing some 9,600 roots. The showing for "Simple Septimans" ($n=7$) given in previous volumes is not much better. However, although the percentage of complete factorizations is not impressively large, nevertheless the incomplete factorization of these high numbers will serve to settle the question of their primality and often this is all that is desired. Moreover the determination of one factor will make the complete factorization by other methods easier to perform.

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