carefully derives from nonlinear three-dimensional elasticity several of the nonlinear theories of rods, plates, shells, taking pains to show that the special hypotheses used are consistent to the degree of approximation considered. The reader not already familiar with this subject, where in the past outright inconsistent assumptions have often been made, may not realize that the author's treatment deserves the description "simple but profound."

C. TRUESDELL

The higher arithmetic. By H. Davenport. London, Hutchinson's University Library, 1952. Text ed. $1.80, Trade ed. $2.25.

This book is an introduction to the theory of numbers which is suitable for a very wide class of readers. On the one hand, no extensive mathematical knowledge is required of the reader; in fact, a good high-school training in mathematics would be sufficient. On the other hand, the author discusses subjects of real mathematical interest and treats them in a very readable way, so that a person of considerable mathematical maturity would find much enjoyable and profitable reading in this work.

The titles of the seven chapters are as follows: Factorization and the primes, Congruences, Quadratic residues, Continued fractions, Sums of squares, Quadratic forms, Some Diophantine equations. As can be seen from the list, a fairly wide range of material is covered. No attempt is made to treat each topic exhaustively, but the author goes far enough to enable the reader to get some appreciation of the main ideas and problems in each area. A few of the more noteworthy things to be found in the book are as follows: (1) a good presentation of the method of mathematical induction and a proof of the unique factorization theorem by this method, (2) a proof of Chevalley's theorem that an algebraic congruence in several unknowns to a prime modulus always has a nontrivial solution if the constant term is zero and the degree is less than the number of unknowns, (3) a proof of the theorem on the number of positive integers n between 1 and $p-2$ (inclusive) for which n and $n+1$ have prescribed quadratic character modulo the odd prime p, (4) a rather thorough treatment of the continued fractions of quadratic irrationals, (5) a presentation of various constructions for the two squares into which a prime of the form $4k+1$ can be decomposed, (6) a discussion (without proof) of Dirich-

dissertation (1943) [Trans. Amer. Math. Soc. vol. 58 (1945) pp. 96–166], and W. Z. Chien has asserted in a letter that the similar material in his paper [Sci. Rep. Tsing Hua Univ. vol. A 5 (1948) pp. 240–251] derives from his Toronto Thesis (1942). The idea does not appear to have taken hold in this country.