BOREVICH, Z. I. AND SHAFAREVICH, I. R., *Number Theory* (Academic Press, New York and London, 1966), x+435 pp., 104s.

This is a translation of the original Russian edition, published in Moscow, 1964. The book is not a comprehensive book on Number Theory in the sense of Hardy and Wright; it concentrates on certain selected topics at a level of difficulty considerably above that of Hardy and Wright. The motivating problems that give rise to these topics are diophantine in nature, for example, representation by quadratic forms and Fermat's last theorem. The methods introduced for tackling the problems are developed at some length for their own sakes and include a considerable amount of field theory, valuation theory and in particular p-adic techniques, local field theory, the theory of divisors, geometrical lattice theory and various analytic techniques including the use of p-adic analytic functions. The work includes a proof of Dirichlet's theorem on prime numbers in arithmetic progression and a proof of Kummer's theorem on the number of divisor classes of a cyclotomic field together with the applications of this result to Fermat's theorem. The combination of motivating problems, development of ideas and techniques and stress on the number theory as a central part of the work has produced an unusual and exciting book, written with considerable style and polish and containing a wide range of important and interesting mathematical results. There are collections of useful problems and interesting tables of facts about quadratic, cubic and cyclotomic fields together with a table listing all irregular prime numbers $\leqq 4001$.

J. HUNTER

MOSTOWSKI, A. AND STARK, M., *Introduction to Higher Algebra* (Pergamon Press, Oxford, 1964), 474 pp., 45s.

This book is a translation of the original Polish version published by Polish Scientific Publishers in 1958. The bulk of the book is concerned with matrices, determinants, vector spaces, polynomials in one and in several variables and some applications of this range of work. There is also an introduction, presented in three chapters, covering set and function notation, induction, simple combinatorial work and number systems, especially the complex numbers. The emphasis is on technique and the presentation is rather old-fashioned. There is little that can be called abstract and when ideas in this category arise they are treated with a minimum of detail. Nevertheless the book contains a wealth of interesting results and the introductions to most of the topics describe the elementary models generalised in these topics; for example, enough elementary number theory is given to act as a motivating force for the polynomial ring theory that follows. J. HUNTER

PATTERSON, E. M. AND RUTHERFORD, D. E., *Elementary Abstract Algebra* (Oliver and Boyd Ltd., 1965), viii+211 pp., 17s. 6d.

This book contains a useful introduction to many of the topics that are now included in most books and courses on algebra. Whether or not the word *abstract* should be included in a description of the range of work covered is a matter of taste, but eventually the ideas and techniques involved will be regarded simply as part of necessary basic algebraic tools. These include set notation, equivalence relations, operations on sets, the basic algebraic structures such as semigroups, groups, rings, integral domains, fields, ideals, vector spaces, linear algebras, substructures, factor rings and extensions such as polynomial rings and algebraic extensions of a field. There are many illustrations from and applications in number systems, number theory, euclidean geometry and matrix theory, and the ideas of isomorphism and homo-morphism are introduced at elementary level. However there is probably a need