

on valuation theory are illustrated largely by examples from the theory of algebraic function fields; and the notions of normal and derived normal models, of great importance in geometry, are introduced. Geometry is seriously introduced in the chapter on rings, and includes an account of algebraic varieties in affine and projective space, together with a treatment of dimension theory, the Hilbert characteristic function and chains of syzygies. The chapter on local algebra gives an account of local rings and their properties, and then makes use of these rings in the local study of algebraic and analytical varieties. This study culminates in a section on analytical irreducibility and analytical normality of normal varieties.

This volume, together with its predecessor, is abstract from cover to cover. But the exposition is not condensed, and the work is likely to become the standard introduction to the arithmetic foundations of algebraic geometry. For this reason it seems a pity that, apart from a few scattered references, there is no bibliography.

L. S. GODDARD

#### Reciprocals of the Integers from 1000 to 9999, with an Appendix on Mechanical Barrel-setting Calculators

By T. H. Redding. Pp. iv+42+2 plates. (London: Taylor and Francis, Ltd., 1960.) 18s. 6d. net.

THE actual entries are the reciprocals to six figures, multiplied by  $10^6$ , so that each entry is divided into two blocks of three digits by the decimal point, thus facilitating transfer from table to machine. The author does not say much about how the calculations have been checked, but some small sampling has revealed no error. There are no horizontal rules except in the frame, so the page is fairly clean, with 1,000 entries at an opening and a thumb-index. A clear modern 'equal height' fount is used, though it is scarcely as effective as the old-style 'head and tail' fount used by Comrie and Peters. There is an appendix of some twenty pages, in which the nature and use of barrel-setting desk machines are described in simple terms for the novice. The book should be of most value to those who are not expert at computation but have need now and then to make desk calculations.

T. A. A. BROADBENT

#### An Introduction to the Theory of Numbers

By Prof. Ivan Niven and Prof. Herbert S. Zuckerman. Pp. viii+250. (New York and London: John Wiley and Sons, Inc., 1960.) 6.25 dollars; 50s.

THIS compact and lucid text could be used by good sixth-form specialists or first-year honours students. In the first part of the book the basic concepts and theorems are presented: divisibility, primes, congruences, quadratic reciprocity, number-theoretic functions, diophantine equations, Farey series and continued fractions, the simpler properties of the distribution of the primes. The last three chapters introduce more specialized topics: algebraic numbers and number fields, the partition functions with the formulæ of Euler and Jacobi, and the fairly recent study of the density functions of a sequence of integers. The proofs are clear and concise, but they rightly demand a certain sophistication of outlook without which the reader is unlikely to be able to see why a particular line of argument is chosen. An excellent feature is the supply of exercises for the student; these range from simple corollaries on the main text to quite searching extensions of it; answers

are given where appropriate. A young student with a taste for number theory and a firm grasp of elementary algebra would find the book profitable reading.

#### Elementary Logic of Science and Mathematics

By Dr. P. H. Nidditch. Pp. vii+371. (London: University Tutorial Press, Ltd., 1960.) 18s.

THIS book has two aims: to provide a detailed but elementary course in modern logic and to present basic material in the philosophy of science, covering probability and measurement, the scientific method and the construction of theories. The author has succeeded well in writing a book that is both accurate, informative and easy to read. About one-third of the book deals with formal logic; sentence logic is studied by means of a valuation theory (truth tables), and in terms of axiom systems. The predicate calculus is developed both as an axiomatic system and as a Gentzen-type system of natural inference; some attempt is made to wed the two codifications but a full equivalence proof is wanting. Among other axiom systems presented are Boolean algebra and a theory of probability. Definitions are given with great care, there are numerous historical references and a good collection of examples, with solutions or hints for solution.

The method used in the second part of the book is largely that of judicious quotation; the great scientists are allowed to speak for themselves and there is no attempt at criticism or comparative study, but there is a valuable selection from original sources.

R. L. GOODSTEIN

#### Health in Industry

A Guide for Engineers, Executives and Doctors. By Prof. R. C. Browne. Pp. vii+157. (London: Edward Arnold (Publishers), Ltd., 1961.) 18s. net.

OVER the years the Nuffield professor of industrial health at King's College, Newcastle upon Tyne, has delivered courses of lectures to science, medical and technological students at the University on various aspects of occupational health. The subjects have been varied and topical, and have shown concern for the health of the executive, the heavy cost of sickness absence, the importance of good design, the causes and consequences of accidents and fatigue, automatic processes and their effects on the worker and the part played by good working conditions on output. Particular attention is directed to the essential precautions which must be taken in using ionizing radiations, while Prof. Browne also analyses the influence of various chemical substances on the factory worker.

The author has now addressed his lecture-material to all employers and managers who are, in some way or other, responsible for the industrial environment. Much of it will be of interest and value, and the book should appeal to many who bear responsibility for people in industry. The book could also be used in industrial health sessions during courses on industrial administration. In such a book a surprising feature is the absence of all reference to skin diseases and the use of barrier creams which may cause more complaints than they cure. In the section on the health of the manager, the author might also have given some practical advice about diet. Many industrial executives become ill because they are unaware of the simple rules of health, although they sometimes call their complaint 'pressure of work'.

T. H. HAWKINS