The parallaxes which are derived in Chapter VI by a statistical discussion of the proper motions are of especial interest, for it was by applying this method to the Cepheids that Shapley and others determined the distances of the globular clusters.

The mathematical theory of a single star drift and its conflict with observations led Eddington to the division of the stars into two drifts. Both the single and double drift theories are discussed, the former leading up to the determination of the solar motion and the latter connecting with Kapteyn's two stream theory. A later chapter develops Schwarzschild's ellipsoidal hypothesis, and the results obtained by the use of different theories are frequently compared.

Much of the work on stellar statistics, particularly that of a theoretical nature, has been available for twenty-five years, but the practical applications have been few due to the lack of sufficient observed data. The author supplies this want in Chapter VIII.

The last few chapters are largely concerned with the work of Jeans and Eddington on stellar dynamics, and some very recent results have been incorporated. One of the most interesting chapters, at least to the reviewer, is concerned with galactic rotation.

The entire book bristles with probability integrals and complicated mathematical formulas. One wishes that it might be possible to read such a book without encountering the probability integral so often. It is not clear, always, just what the author is trying to show nor what has been proved after a page of formulas. Perhaps this is unavoidable; at least the author warns us in the preface that he is aiming at a mathematical treatment. One wonders occasionally if his equations are not "yes men" who give a mathematical character and amplification to the ideas entrusted to them by their master.

The book is well worth the effort required to read it and is the best available account of the subject. Dr. Smart is to be congratulated on the successful completion of such a comprehensive and scholarly book.

H. E. BUCHANAN

Vectoranalysis. By Siegfried Valentiner. (Sammlung Göschen, no. 354.) Berlin and Leipzig, de Gruyter, 1938. 136 pp.

The first sixty pages are devoted to the definition, algebra, differentiation, and integration of vectors. To motivate the development the author draws freely upon mechanics. In the second part of the book vectors are applied to potential theory, hydrodynamics, and the theory of electricity. Part three deals with linear vector functions, dyads, and tensors with applications to the theory of elasticity. The book contains thirteen carefully chosen figures and closes with a table of the more important formulas used. The notation is conventional.

The task of including so much material in such a few small pages required skillful planning. Although the explanations are in general not detailed, the beginner will find the account readable. For the person already acquainted with the elements of vector analysis the book will be a useful handbook.

V. V. LATSHAW

Grundbegriffe und Hauptsätze der höheren Mathematik, insbesondere für Ingenieure und Naturforscher. By Gerhard Kowalewski. Berlin, de Gruyter, 1938. 156 pp.

Dr. Gerhard Kowalewski, finding that mathematics is taking a less and less prominent place in the German educational system, has felt obliged to do his part in presenting the fundamentals of higher mathematics "without which a profitable study of engineering and the natural sciences is inconceivable."

No one will hold it against Dr. Kowalewski that his very original 156 page booklet does not try to cover "the fundamentals and basic laws of higher mathematics" implied by the title. But it may be well to warn budding engineers and naturalists that this is no beginner's textbook.

Of the three chapters—"Vector Calculus and the Theory of Determinants," "Theory of Limits," "Differential and Integral Calculus"—the contents and the spirit of the last one came nearest to what one finds in the average textbook. The first chapter (an authoritative treatment of the relations between vectors and determinants) and the second one (Weierstrass' law and some of its conclusions) will be appreciated most by advanced students, and the place of these subjects in a condensed curriculum appears a little doubtful.

American readers will be tempted to compare Dr. Kowalewski's little volume with *Higher Mathematics for Engineers and Physicists* by I. S. and E. S. Sokolnikoff. Taking into account a 3 to 1 ratio in size in favor of the Sokolnikoffs, this reviewer believes that engineers will prefer the American work because of its excellent selection of important material and its "engineering approach."

Dr. Kowalewski's work, expert as it is, misses this appeal.

R. P. KROON

Your Chance to Win. The Laws of Chance and Probability. By H. C. Levinson. New York and Toronto, Farrar and Rinehart, 1939. 343 pp.

According to the advertisement of this book, the author "has taught mathematics at Ohio State University and has devoted more than eleven years to business statistics and to executive work in business." After reading the book, one wonders also how much time the author has spent at such places as Monte Carlo and Canfield's.

This book is written for the layman, so the mathematics involved is just an application of the laws of probability that are found in any college algebra. The topics covered by the book include such titles as luck, chance, statistics, the world of superstition, fallacies, heads or tails, poker chances, roulette, lotteries, craps, bridge, fallacies in statistics, statistics and science, and so on.

This book is more interesting for its practical psychology and common sense than for its mathematics. Everyone is superstitious and a "gambler at heart" (according to an old saying), so perhaps everyone should read this book. Again, mathematics is said to be just "organized common sense," so perhaps mathematicians should take also a scientific interest in this book.

At any rate, undergraduate mathematics clubs would find this book excellent for at least one meeting, if we may judge from the sudden and great interest shown by freshmen when the topic of probability is reached in the course in college algebra. The reviewer enjoyed immensely reading this book and was especially interested to find worked out why it is so hard to "fill the inside of a straight" in poker. However, a word of warning should be given at this point. The fundamental assumption of this book is that all the activities discussed therein are conducted honestly. As we all know, this assumption is so often not satisfied in practice.

ALAN D. CAMPBELL

Elementary Theory of Operational Mathematics. By Eugene Stephens. New York, McGraw-Hill, 1937. 11+313 pp.

This book is concerned primarily with the theory of symbolic operators and their application to the solution of differential equations. The book, as stated in the preface, "is an outgrowth of an attempt (1) to search out the history of these [operational]