of these theories, but will probably carry little if any meaning to the person approaching the subject for the first time.

In the second chapter the author presents a condensed summary of the matrix mechanics of Heisenberg, Born, and Jordan. The treatment is sketchy, purely analytical and stated in general terms with no illustrative problems. In a later chapter the linear oscillator and the hydrogen atom *are* worked out comparatively from both matrix and wave equation points of view. These are the only illustrative applications in the book. In the second chapter mention is also made of Dirac's q-number theory and Schrödinger's operators and their corresponding matrices.

Chapter III is devoted to the de Broglie waves, where the treatment, due to the compression of the material, lacks the clarity and grace of de Broglie's own papers and monographs. This is followed by chapters on Schrödinger's wave mechanics, the perturbation theory in quantum mechanics, wave mechanics and relativity (in which the five-dimensional theory of Kaluza and Klein is discussed), and finally the general transformation theory with its statistical implications. A few pages are here devoted also to the new statistics of Bose-Einstein and Fermi-Dirac.

The reader who is familiar with the details of the current theories will find much that is stimulating in this book, even though it can hardly be termed a thoroughgoing critique.

R. B. LINDSAY

An Introduction to the Geometry of n Dimensions. By D. M. Y. Sommerville. New York, E. P. Dutton, 1930. 196 pp.

In recent years books on some phase of n-dimensional geometry have appeared in all languages. In England and America, however, there seemed to be little interest in this subject before the appearance of general relativity, and the interest then was connected with Einstein. In the preface Sommerville tells us that Englishmen were among the first to write on this subject, and that the subject was entirely neglected until recently; now, however, there are signs of a revival of interest. This book is a most valuable addition to the English literature of the subject.

The aim of the author is not to write an introduction to the Einstein theory but rather to select topics which will reveal to the reader the inherent beauties and surprises of the subject. Neither has he confined himself to metric, projective, or euclidean geometry, but has used freely the ideas of all three. The book starts with the fundamental concepts of incidence, parallelism, and perpendicularity (largely synthetic). Then follows the analytic treatment in which algebraic varieties are discussed, especially the quadric. We also find Plücker coordinates introduced and neatly applied. The applications of integral calculus are also given.

The last half of the book is devoted to the study of the polytope (analogue of the polyhedron) which is treated in considerable detail. This part of the book the reviewer found most fascinating both on account of the material chosen and the elegance of the treatment. The last chapter discusses the regular polytopes.